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## TRANSLATION:

LESSONS FROM THE WAR OF INDOCHINA; VOLUME III. (Enseignements de la guerre d'indochine; fascicule III), 96 pp.

## PART ONE

### SINO-SOVIET-INSPIRED COMBAT METHODS

"The material superiority of the enemy is not a serious factor. The important thing is the mobilization of the populace. The masses must constitute a great ocean in which the enemy will drown itself". Mao Tse-Tung

The organization of the Viet-Minh forces and the execution of the "war of liberation" are the work of one leader, Vo Nguyen Giap, who from 1943 to 1955 assumed, practically speaking, the duties of Minister of National Defense and Generalissimo.

Giap continuously applied Mao Tse-Tung's doctrine, but the necessary changes which he had to make in the principles evolved from the conquest of China, brought about an evolution in Viet-Minh tactics during the eight years of the campaign.

Giap realized, right from the initial stages of the conflict, that "for an army which is relatively weak and poorly equipped, the classical concept of warfare is extremely dangerous and should definitely be set aside".

The method of action initially adopted was, therefore, guerrilla warfare. But Giap did not succumb to excessive use of guerrilla warfare which had already been condemned by Mao Tse-Tung and he soon came to admit that "the primary means for achieving the objectives set up for the Vietnamese People's Army is guerrilla warfare and the second means is the war of movement".

The latter was to occupy a more and more important place in Giap's thinking. In predicting as early as 1950 the combat methods to be used for the all-

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out counteroffensive, he wrote: "the methods to be used by us shall be, in order of importance, the following: the war of movement, guerrilla warfare, pitched battle".

Most of the lessons obtained from the war of Indochina are applicable, however, to the guerrilla and counter-guerrilla tactics, but it would not be advisable to consider these only in the context of foreign theaters of operations.

There is nothing to rule out the possibility that certain regions of Central Europe and, even more so, Eastern Europe would not be just as appropriate a terrain as the Annam mountain range for operations similar to those of the regulars and regionals of Viet-Minh.

The method of large-scale guerrilla warfare which were used in Indochina could therefore be used again.

"This possibility is not to be cast aside, for all present parties are studying the two latest military campaigns which have occurred in the world (Korea and Indochina) and are trying to extract some lessons from them".<sup>1</sup>

The success which has been achieved by the Viet-Minh holds out an invitation to copy some of their methods and we could see these methods applied in other areas.

Also, the observations set forth in Volume II would still be applicable in regions infested with partisans. In particular, the chapters devoted to centralized control and surface control could retain all their value in marshy areas such as Western Poland or Bessarabia and only a few changes would be needed to adapt them to mountainous and woody regions such as the Carpathian

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<sup>1</sup>Chief of Battalion X.

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Mountains or to half-forest, half-water areas such as Pomerania or Western Prussia.

On numerous occasions, however, the Viet-Minh made local and almost always momentary use of methods which were no longer those of large-scale guerrilla warfare and in which we have noticed the rules of Soviet tactics and the uses which Chinese troops made of them to the south of the Yalu River.

The enemy even admitted this:

"The Vietnamese People's Army has gloriously won the war of liberation of the people because it used the techniques and the tactics of warfare of the masses, applying the theory of Marx and Lenin in armed struggle, the ideas of Mao Tse-Tung and the experiences of the Chinese liberation troops under the actual combat conditions of Vietnam. These techniques and tactics are among the essential elements in the victory".<sup>1</sup>

The intermittent experience which we acquired concerning these combat methods has not permitted us to find the surest methods. Nevertheless, the observations made at the time of the battle of Dien-Bien-Phu and the night attacks in the delta are of particular interest.

Finally, the Viet-Minh forces have shown us, particularly during the last years of the war, that large-scale operations would be carried out despite rudimentary logistics and despite the absence or the scarcity of certain material such as heavy artillery and armored vehicles.

Assisted by favorable terrain, the Viet-Minh was able to ward off our air attacks and to do without its own air power. It was able to offset the trucks used against it by using thousands of coolies. It made use of night-time to

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<sup>1</sup>A Viet-Minh radio broadcast of December 22, 1954, on the occasion of the 10th anniversary of the founding of the Vietnamese People's Army.

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render less deadly the fire from our cannons, tanks and mortars. It hurled into assault swarms of infantrymen who had no other equipment than a weapon and a bowl of rice. It overcame concrete obstacles using simple explosives and bazookas. In short, the Viet-Minh constantly proved to us that simplicity did not exclude power and that deficiencies in material could be overcome by sheer multitudes of men.

All of these lessons had already been learned by the Wehrmacht as a result of its encounters with second-class Soviet divisions when these divisions overran the German positions by force of sheer numbers and when these divisions advanced relentlessly with no logistic support other than telegas (rude four-wheeled wagons without springs, used in Russia).

From these observations we must realize the danger of giving the enemy the same possibilities of action which we give ourselves in the event that we should ever again have to fight Soviet or Asian armies.

As a minimum, we should determine the correction coefficient which should be used to alter the estimates of our G-2 (Intelligence) each time that we are faced with trained and experienced infantrymen such as those of the 308, 316 and 320 divisions or such as the veteran troops of the regional units which flocked around the Tonkin Delta or the Jonscs Plain.

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## CHAPTER ONE

### VIET-MINH DEFENSIVE METHODS

The Viet-Minh has been able to hide its vital installations (governmental organs, armament shops, large warehouses, etc.) in areas of difficult accessibility and at distances which placed them outside the range of our raids. The Viet-Minh was therefore never faced with the necessity of having to resort to a defensive battle to protect its essential material.

In areas which were fought for by us and the Viet-Minh, the Viet-Minh used dispersion to protect its resources and, in addition, it camouflaged them in hiding places.

Because of this, its units were rarely forced to engage in a defensive standstill. Each time that we attempted to dislodge them from a region they could disappear because they left only the most insignificant depots to us which we were able to uncover.

CONCEALMENT - This systematic refusal of combat was, incidentally, the application of the first of the three principles set forth by Mao Tse-Tung:

"If the enemy attack, I conceal myself;

If the enemy defends itself, I harass the enemy and wear him out;

If the enemy retreats, I attack him".

The Viet-Minh stressed many times the advantages of this "tactic of the sparrows" which baffled our attacks and left to us only acres of rice fields or forest.

It is quite probable that Soviet infantry would make frequent use of such tricks to attract us into traps or simply for the purpose of biding time.<sup>1</sup>

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See p. 6 for footnote.

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<sup>1</sup>On the strategic level, the Red Army has made constant use of withdrawal to hide its forces from encirclement manoeuvres and also in order to wear out the offensive spirit of the Wehrmacht. The immensity of the land area of Russia, in fact, made such a tactic possible.

This is the opinion of numerous officers:

"Concealment in defensive combat is among the basic elements of the guerrilla ethic and would retain all its value in a future European war. This method makes it possible to limit unnecessary losses and therefore to preserve the potential. It has been used on a daily basis by the Viet-Minh, with great effectiveness.

"This method naturally is repugnant to our soldier mentality because in some degree it ressembles the abandonment of leadership and a type of rout".

"In order to be effective, this method requires:

- strong will, mastery of self, a combat spirit,
- deep knowledge of the country, from its topography to its resources and knowledge concerning the native populations in order to live, to pass unnoticed, to observe and to obtain information, to come out again at the proper time and to resume fighting".<sup>2</sup>

Here is a particularly striking example of this rude concealment of the enemy:

"I recall a combined operation which took place in August, 1948 in the Jons Plain, that immense marshland which was one of the preferred hideouts of the Viet-Minh in Cochinchina. The task here was to surround in a peninsula the rebel chief Nguyen Binh and one of his largest bands".

"Several infantry battalions, assisted by "Crabs", moved in deployed

<sup>2</sup>Remark by the Commander General of the National Vietnamese Land Forces.

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fashion from the base of the peninsula towards its point. At the point, two and a half companies of paratroopers were to directly attack the command post of the rebel leader and close up the withdrawal path of Viet-Minh elements which had been scattered by the battalions".

"In effect, the paratroopers jumped directly onto the objective and were greeted by the discharge of fire-arms which occurred while they parachuted down".

"Certainly no more than 20 seconds elapsed between the time that the paratroopers hit the ground and the time when they launched into the assault. The paratroopers fell into a void. Even though they found heavy machine gun shells still hot, the guns and gunners had disappeared as if by magic.

"The barrage which was intended for apprehending the units which had been driven back by the infantry battalions was rapidly set up. The battalions joined up with the paratroopers without any of them having seen anything at all".

The Viet-Minh used two methods to hide from our forces: at times they hid in underground hideouts, at other times they used pure and simple withdrawal, but the characteristic aspects of the concealment were identical: at a given signal the fighting stopped abruptly, generally after particularly heavy fire had been inflicted upon the adversary who was thus forced to double his caution.

During the minutes which had been saved in this way the Viet-Minh fighters, individually or in small groups of 2 or 3 men, took refuge in the hideouts where they reached a rallying point which was situated quite often several kilometers away.<sup>1</sup>

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<sup>1</sup> Sometimes the lay-by in the hiding places was only the first jump and the rallying point was reached the following night.

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The leaders of the 3-man cells were specially trained to locate their route by using a rough sketch and the regrouping took place almost always at night.

In addition, the enemy patiently sought for end-of-the-afternoon fighting which increased still more the effects of this break in contact.

In this regard the enemy excelled in making us lose the morning hours in aimless firing against advance snipers<sup>1</sup> and in tiring us out in unsuccessful probing of one or more villages containing only mines and booby traps.

The wear and tear imposed on our infantry, its well-founded fear of mines and its inability to move around rapidly resulted in our using too seldom the customary procedures of maintaining contact which would have been the only means for preventing the disappearance of the enemy.

It seems, moreover, that the artillery could have inflicted definite losses on the enemy by pursuing him with time fire because of the fact that percussion firing was not very effective against a handful of infantrymen moving in the rice fields and a large supply of POZIT rockets would have been required to wipe them out quickly enough.

As a final point, we were not able to measure the effect which our armored units could exert because the rice fields prevented them from rushing forward to cut off the enemy's retreat.

DEFENSE POSITIONS - On various occasions the Viet-Minh reversed their habitual tactics and set up a static defense against us. But the Viet-Minh knew at that time how to make skillful use of the terrain to set up their line of resistance.

Whether it was a question of the enemy positions around Dien-Bien-Phu<sup>2</sup> or

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<sup>1</sup>These snipers were most often DU KICH's, or village guerrillas.

<sup>2</sup>See p. 9 for footnote.

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<sup>2</sup>For example, the support points covering hill 781 (N.E. of Dien-Bien-Phu, from where a battery fired directly on the air strip.

certain fortified villages of the delta, we were able to make the same observations as the writer of the following report:<sup>3</sup>

"I learned from the Viet-Minh a method, which if it was not new was at least not very much used by the French Army, for defense in the woods and in the villages arranged in groups.

This method consisted in setting up completely-camouflaged support points without bringing about any destruction of the vegetation, houses, without any supplementary defense, etc. The outskirts were purposely abandoned. The only persons remaining there were snipers who might eventually be given the mission of slowing down the attacker. When the attacker would penetrate the support points the unseen defenders would permit the attacker to become entangled in their position.

Once the attacker has been sufficiently tangled up he can be destroyed either by fire-power, machine guns and grenades, which are set off all at once, or by a counterattack.

The utilization of support fire is not possible against the defenders as long as they overlap with the attacker.

Naturally, the withdrawal of the attacking elements who are still alive is extremely difficult, long, and costly. Artillery and aviation then prove to be half-ineffective against positions which are so well camouflaged that even the light-infantry soldiers, in walking over the shelters, did not see them. Quite often, besides, I saw company commanders or platoon leaders who, even in

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<sup>3</sup>Commander X.

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the enemy positions, were not able to give me any detailed information on the terrain, and even less information on the map concerning where they were located to the nearest 100 meters.

Thanks to their flexible defense capability, the Viet-Minh support points were evacuated for other positions which were just as well camouflaged, just as well buried, when we returned there in force after intensive heavy artillery barrage. We discovered immediately that the 105, especially the instantaneous 105, was ineffective, its shells exploding in the branches above the troops who were sheltered from 81 mortar fire and the shell explosions.

I think that we have here a very effective combat method whenever the terrain is suitable. We could very well use this method ourselves. It requires the infantry to learn to fight without having open fields of fire and to completely master close in-fighting and even hand-to-hand fighting".

But this systematic abandoning of ridges and outskirts and the selection of opposite slope positions or else positions within the woods and localities would require reeducating our infantry.

Has not the infantry been instructed since August 18, 1870 in the virtues of the forward slopes of Saint-Privat, and has not the appearance of machine guns and automatic rifles brought about a search for deep fields of fire whereas the increasing effectiveness of the bombardments exposes the "master firing plans" to destruction before any use can be made of them?

It would therefore be necessary to reach the logical conclusion from the strengthening of our armament: the automatic pistols, the automatic rifles, the rifle grenades practically doubled the projectiles that the 1955 combat group can muster as compared with the 1939 group.

But this capacity to sharply stop the attacker is only applicable at the

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reduced range of the new weapons, i.e., within the strip of terrain between 0 and 100 to 200 meters. All things being equal, we may therefore state that today's infantry is capable of stopping an assault with twice as much effectiveness as formerly and the need for a glacis is less and less justifiable.

It remains for the cadre to be convinced and the feeling of insecurity which grips the infantryman when he does not see clearly ahead of him to be counteracted. It is therefore necessary to teach the infantryman to dissociate the function "see and inform" from the function "fight and defend", by keeping eyes only on the slopes and the ridges.

This new orientation in training would certainly be difficult. It would also be necessary to devote oneself to it as soon as possible.

ORGANIZATION OF THE TERRAIN - As regards the organization of the terrain, the Indochina campaign has truly confirmed the value of deep, narrow and dispersed combat grounds.

The schemas of our regulations therefore turned out to be good, with the proviso that they be changed, if necessary, to bring about a reduction in their faults. Besides, each time that the solidness of the terrain makes it possible, there will always be an advantage to completing them with recesses so as to approximate the "fox holes" which were so perfectly suitable to the small size of the Viet-Minh.

It should be noted that machine gun attacks from the air proved to be completely ineffective against an infantry snuggled up in such cover. Napalm was also practically ineffective unless the hiding places were covered over with humid foliage.

Besides underground hideouts, the Viet-Minh used conventional shelter in many villages where the populace constructed open-excavation shelters inside

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straw huts so as to avoid our bombings.

The weak resistance of these organizations and the experience which we acquired in Dien-Bien-Phu concerning insufficient explosion layers and too narrow protective masses have indeed shown the value of the numerical data included in our regulations:<sup>1</sup> we cannot fool around with figures which themselves were the result of long experience, without paying the penalty.

As a final point, the battle of Dien-Bien-Phu underscored the value of a good set-up of the artillery positions.

On the enemy side, the batteries had the benefit of downward views and, above all, their field of fire was reduced because they concentrated their fire in the shallow basin of Dien-Bien-Phu. In this way the batteries could be set up in casemates, could be completely camouflaged and thus take advantage of remaining unpunished.<sup>2</sup>

On the other hand, our cannons were exposed to the investigations of all of the enemy observers, under the condition of being able to fire from all azimuths. Thus conditions only allowed for the construction of cells of the kind currently used in the F.T.A.<sup>3</sup> and prohibited the utilization of the casemate, which had already shown its value in the war of 1914-1918.

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<sup>1</sup> During the battle of Dien-Bien-Phu it was requested that terrain set-up rules be sent to guide the reinforcement works.

<sup>2</sup> The 24 pieces of 105mm. that the Viet-Minh put on the battle line in Dien-Bien-Phu were not damaged at all, despite air attacks and napalm attacks which were too dispersed.

<sup>3</sup> The inside surface (therefore the vulnerability) of a cell can be reduced at the expense of a few arrangements.

In effect, the cell for a 105 H.M. 2 cannon has a surface of approximately 60 m<sup>2</sup> if the levelling is done by pivoting around a wheel and 40 m<sup>2</sup> if a rolling path is installed under the wheels which permits pivoting around the center of the shaft. An all-azimuth cannon should be able to be inserted into a cell of about 15 square meters, the arrows being buried if necessary.

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These circumstances explain the ineffectiveness of our artillerymen and render less convincing the opinion put forth by one of the fighters at Dien-Bien-Phu.<sup>1</sup>

"The almost invulnerable situation which the Chinese and Vietnamese batteries created by means of an original set-up of their firing positions leads one to think that in a European conflict, under favorable conditions, the artillery of the two opponents could derive inspiration from what has been accomplished in Asia".

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<sup>1</sup>Leader of Battalion X... commanding a resistance center in Dien-Bien-Phu.

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## CHAPTER II

### VIET-MINH OFFENSIVE METHODS

The most typical combat methods of the Viet-Minh infantry were constant recourse to infiltration (either for the purpose of breaking through our defensive barriers or simply for the purpose of outmanoeuvering our look-out cordons) and the habitual use of night for attacking.

The mastery which the enemy was able to acquire in these two methods which are so difficult and the advantages which they obtained by using them should give us cause to dread any future enemy doing the same.

INFILTRATION - Infiltration is a word which has several meanings because it applies both to the patrol soldier creeping between two snipers and to the regiment crossing a poorly guarded ford under darkness.

At the small-unit level the Viet-Minh infantry has given us innumerable proofs of its expertise, whether in the case of destroying a sentry or in taking advantage of a deficiency in the patrol system, in penetrating a post and then winning it over in a few minutes from the inside, or in the case of permitting one or more companies, hidden in the caverns of a village to escape at the time that our troops arrive.

But this remarkable utilization of the terrain has not taught us anything that we did not already know. At the very most we have once more ascertained the need for extended training in combating such methods.

On the other hand, the Viet-Minh, with forces often as large as a regiment, have accomplished clandestine crossing of our defensive networks.

This was the case particularly when the regular units penetrated inside the Tonkin delta by crossing the line of posts which surrounded it.

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The marching unit could then be the regiment and the various corps of divisions 304 and 320 made this crossing several times. We could never prevent this even when we suspected the impending nature of the crossing and deployed battalions along the water lanes.

The same infiltrations occurred when the Viet-Minh warded off one of our encircling operations and the units threatened by encirclement broke through the defensive network which we set up every evening to ensure a tightening.

In both cases it was rare for the enemy to immediately exploit the advantages of having broken through our units. Generally, the enemy only sought to reach a certain area in order to speed up corruption there or else to launch attacks or ambushes.

We therefore did not suffer the losses which an enemy using the same methods of infiltration could have inflicted upon us if he had enlarged the break, and above all if he had swallowed up the armored equipment.

The lessons which we can derive from our experience in Indochina have to do solely with the ability to penetrate our defense barriers. They are no less valuable because of this.

When the enemy wished to penetrate a screen which had been set up long enough beforehand so that the held points and the intervals were spotted (this being basically the case when it was a question of breaking through the cordon of our posts) the following procedures were used:

Very often a small detachment proceeded to make a real "opening" in the selected route. It discovered and, if necessary, jostled the small look-out posts or patrols watching over this portion of terrain, then it cleared the passage of mines.

The axis of progression was then "boxed in" in its dangerous portion by

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elements which concealed our posts and our support points. Sometimes a diversion was made to routes which were not used.

The crossing was then made and a regiment could file past within 200 meters of one of our look-out posts without being noticed. The men crossed over into the dangerous zones using small gymnastic-type steps and the infiltration of 3500 men, plus the coolies, did not require more than one hour.

The regiment could, nevertheless, traverse a distance of 25 kilometers during the night by avoiding roads and trails and by using only paths and small embankments.

When they had to cross over water the Viet-Minh barely slowed down because most of the soldiers crossed by riding on banana tree trunks or by using any other available means of support while the heavy weapons and the wounded men were carried across on sampans or bamboo rafts. The armies of antiquity or of the middle ages used similar methods.<sup>1</sup>

On the other hand, we felt reluctant to rid ourselves of the "cult of water trenches" and too frequently we drew an argument from the very presence of a brook or a river regarding extension of our barrier system.

The enemy thus easily escaped our watch and knew, in particular, how to take advantage of the windings in order to escape from possible flankings of our automatic weapons.<sup>2</sup>

The river forces, when they took part in the encircling, made the passage more difficult however. But in this case, too, it was necessary to sufficiently

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<sup>1</sup> Towards the end of the conflict, however, many Viet-Minh were equipped with inflatable jackets.

<sup>2</sup> In addition, the Viet-Minh made skillful use of the fact that the current often carries floating bodies from one bank to another at certain points of the winding.

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supply the water line and a river boat doing look-out work was necessary every 500 yards.

Besides, when the enemy withdrew, the fire from our infantry set-up on a barge was handicapped by the presence of friendly craft on the water's surface.<sup>1</sup>

When we were dealing with a defensive screen which was deployed occasionally, as was the case during encircling attempts, the enemy strived, of course, to locate a weak point in our installation.

After having taken advantage of dusk to carefully observe where our various elements were located, the enemy dispatched light patrols to feel out our position, to cause our automatic weapons to be used, and in this way to reveal a corridor which was not fought over or fought over to only a small extent.

The crossing was then made:

- Either by "capillarity", the Viet-Minh sneaking in by groups of three to twelve men into all of the cracks in our front. This procedure was generally used during the second half of the night so as to take advantage of the slackening in the attention of our look-outs.

- Or by breaking through a weak point. In this case the enemy launched a surprise attack on one of our look-out posts. The enemy then overwhelmed the defense, opened up a gap of several hundred meters and all of the enemy soldiers swarmed into it in a stealthy manner.

This procedure was generally used in the beginning of night because the enemy could thus have several hours available to disappear.

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<sup>1</sup> In his operations report, the commander of the river flotillas of Indochina clamored for special ammunition which would not rebound on the water. In addition, he stressed (see Volume II) that the effectiveness of a river encirclement would have been greatly improved by using mobile patrols equipped with very quick small engines (WIZZARDS).

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The only parry to this ruthless break-through was a concentration of artillery fire applied immediately to the threatened area. This parry therefore required a complete system of final protective fire, very cautious D.L.O.'s, and a little bit of luck.

The Viet-Minh probably would not have made such bold use of infiltration if it did not have the advantageous assistance of the people, a logistical set-up which had been put into effect beforehand (food and ammunition) and the help of local guerrillas.

But, on this condition, we can seek to summarize our own experience by making a numerical evaluation of the "degree of tightness" obtained by our defensive set-ups.

If we assume therefore a battle zone which was guarded by a battalion<sup>1</sup> and the possibility of enemy infiltration, we arrive at the following findings for a very dark night:

BATTALION FRONT	NUMBER OF VIET-MINH UNITS ACHIEVING INFILTRATION
less than 1200 meters	some isolated units
between 1200 and 2000 meters	one or several platoons
between 2000 and 4000 meters	one or several companies
more than 4000 meters	one or two battalions, sometimes a regiment

It should obviously be noted that our infantry was badly off from all points of view to engage in night fighting, but the foregoing figures confirm the data of our current infantry instructions.

Is it not true that these instructions provide for a maximum front of 2000 meters in order to achieve effective watch and that they require a front of 1000 meters to resist a strong attack?

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<sup>1</sup>Whether this battalion is set up in a series of posts or establishes itself on open terrain.

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If, therefore, we wish in the future to avoid operations similar to those of the Viet-Minh infantry, it should be taken into account that 2000 meters is a maximum and that a battalion deployed in this manner must also count on adequate artillery support.

In addition, the battalion must be established on the ground prior to dusk so that it will not be caught by surprise by darkness before it is set up.

As a final point, the enemy must be opposed by "rigorous intelligence, massive firepower applied immediately after the enemy is spotted, and, above all, a fighter whose qualities are equal or greater".<sup>1</sup>

We must realize the value of some of our paratrooper battalions or army battalions to which are due the successes obtained over Viet-Minh units which attempted to attack them.

ATTACKING SUPPORT POINTS - Whether they wished to wipe out one of our posts or to take by assault a circumstantial support point set up by one of our mobile units, the Viet-Minh attack was characterized by:

very careful reconnaissance

firepower concentration over a minimum of points

the activity of extremely thick assault waves attempting to overwhelm the defense.

As regards the first two points, the enemy has not taught us anything original and those who had to undergo the thickness of Viet-Minh bombardments (sometimes artillery, more often mortars and recoilless cannons) did not fail to note that our losses were singularly worsened by the fact that our support points were grouped together in pockets.<sup>2</sup>

<sup>1</sup> Lt. Colonel X (Tonkin).

<sup>2</sup> As a result of having to cover the artillery, the command posts, the conveys and to face all directions. Thus a battalion resistance center was often piled up.

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In effect, the enemy always utilized firepower for their attacks which was less than that indicated in our instructions.

"Their artillery never took part by group and even at Dien-Bien-Phu it did not appear that the Viet-Minh artillery had effected massive concentration of firepower. Their action was primarily undertaken in the form of sustained harassment at a relatively slow pace".

"The mass effect in preparatory firing was obtained by the concentration of fire from all heavy equipment of the battlefield".<sup>1</sup>

The enemy, indeed, made use of infantry mortars, in many instances, to bombard our positions. The enemy made habitual use of the mobility of this weapon and, although not an expert marksman, made excellent use of the weapon thanks to the ease of grouping the hits on targets which were of the order of vulnerability as our units.

It should be noted, as a final point, that the use of mortar shells remained less than the number which we require for the 105 mm. calibre for effectively putting the entrenched enemy out of action.

At Dien-Bien-Phu, however, the renewal of the bombardments brought about the fatal disruption of our installations.

"At ELIANE 1, in particular, the ground was raked and pulverized to such an extent by the explosions of time-delay projectiles that it became absolutely

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<sup>1</sup>Summary of information gathered from wounded men liberated from Dien-Bien-Phu, by the G2 of the Commander-in-Chief. These remarks have been corroborated by a document of Chinese origin which established in 1948, the instructions for using the artillery. In particular, this notation is of interest:

"In short, for a total of 50 pieces of artillery, 9 to 12 pieces will be used for the counter-battery, 3 to 5 pieces will be placed in reserve, 32 to 38 pieces will be used for intensive firing before the infantry assaults so as to permit the infantry to penetrate into the gap".

These data, obviously, apply to divisions having a certain large amount of artillery available.

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impossible to establish new organizations".<sup>1</sup>

Finally, the Viet-Minh were always able to take advantage of their recoilless cannons, which, followed immediately after the shock troops and having rid-dled our most obstructive blockhouses by incendiary blasts, were able to take part in the fighting even inside of our troop disposition.<sup>2</sup>

The element which had the greatest impact on the troops in Indochina was the mass attack, the "human submersions".<sup>3</sup> All of those who experienced such attacks described them vividly in the terms which the Russians had used as early as 1905 during the Mukden attacks:

"With the Viet-Minh principle of not accepting combat unless the numerical odds were in its favor, I obtained the impression, from the fighting which occurred on December 17, 1949, in the Marble Mountains (Montagnes de Marbres) -- one against five --, on February 6, 1951 on National Route 1 at Tu Cau (one

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<sup>1</sup> Summary of information gathered from wounded men liberated from Dien-Bien-Phu.

<sup>2</sup> Various Viet-Minh documents give us the usual quantity of support weapons. Here, for example, is what was announced in June, 1954, for attacking a modern support point comprising a garrison amounting to a company and having 5 peripheral blocks and a central block, with five strands of barbed wire.

The Viet-Minh study provided for engaging one battalion, reinforced by a battery having 3 75mm. guns for mountain use, a platoon with 4 57mm. DKZ's and an escort company (2 82mm. mortars and 4 machine guns).

This firepower was added to the firepower of the battalion's fire support company: 3 75mm. cannons, 4 81mm. mortars, 6 60mm. mortars.

The preparatory phase was made up of a 75mm. blast on the blockhouses "interval blows" and 3 bursts of 10 mortar blasts, i.e., 180 blasts of 81mm. and 180 blasts of 60 mm.

The mortars were to cease firing when the first block was attacked, the 75mm. cannons were to transfer their firing on the furthest blocks.

The fire from these various weapons could not, therefore, meet the "amount necessary to wipe out" provided in our instructions except under the assumption that the area of the post was not greater than one or two hectares.

<sup>3</sup> For example, the attack of Xom-Pheo on the night of the 7th to the 8th of January 1951, on central route (R.C.) 6, where 959 Viet-Minh bodies were counted. The attack of support point 21 bis at Na Sam on December 2, 1952, where 250 bodies and about 50 automatic rifles were found in the barbed wire networks.

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against fifty), on May 8, 11, and 18, 1950 in the region of Ngu Giap (one against twenty), of a human tide, the impression of fighting an enemy who, regardless of the number of losses inflicted on him, always has the men to oppose you".<sup>1</sup>

This superiority was not at all prescribed, however, by the enemy command but simply ensued from its doctrine. In effect, whether it was a case of attacking one of our posts or one of our closed support points, the intention of the Viet-Minh was to concentrate efforts on a single point, covering this action by diversions on two other fronts, thus the formula which was constantly applied: "one point -- two fronts".

Besides, the Viet-Minh infantry rules prescribe in the following manner the forces to be used:

"When attacking a large fortified position, it is necessary above all, in order to succeed in opening the gap and in fighting inside the enemy encampment, to concentrate forces which are crushingly superior in numbers:

- Forces at least three times greater than those of the enemy and supporting firing forces at least 5 times as strong.

"The troops engaged on the primary front should consist of 7/9ths and sometimes 8/9ths of the total forces".

In practice, the application of this rule resulted in massing the infantrymen onto a very narrow strip of terrain.

If we consider, in effect, one of our battalion-level centers of resistance, it is easily seen that the enemy attack requires three battalions and at the point of main effort 4 to 9 companies would usually be found, whereas 3 or 4 companies would attack the two other fronts.

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<sup>1</sup>Lieutenant X.

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Finally, the friendly company which will support the assault on the Viet-Minh shall need to face odds of 9 men against 1, and if this reasoning is continued it could be shown that some of our platoons might have to fight against odds of 30 or 40 to 1.

Besides, the Viet-Minh were more inclined to use human concentration when they fought during the night, inasmuch as darkness necessarily results in a large concentration of the troops.

The enemy assault could always be fed by new fighters and the onslaught of successive waves ended up by getting the better of the defense.

It is not necessary to stress the courage and the lack of worry over losses which enlivened the enemy infantrymen. It suffices, in this respect, to cite a Viet-Minh comment:

"We have less men as compared with enemy.

"Nevertheless, under the bombs and the shells dropped by its aviation and its artillery, we never hesitate to throw ourselves into the attack with absolute contempt of death".

"We find our joy in hand-to-hand combat. Our aim is to terminate the fighting to our benefit".

Several times, and in particular at Dien-Bien-Phu, it was possible to note that the Viet-Minh infantrymen did not hesitate to send themselves forward against our support points without lifting their preparatory firing and that they moved forward under their own firepower. It is difficult to know whether this was owing to a lack of coordination between the attack echelon and the support echelon or whether it was a deliberately used attack procedure. The element of surprise obtained by an attacker who moves forward under his own firepower during an attack at nighttime surely compensates for the losses which his

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shots cause him.

Whatever the explanation may be, the Viet-Minh were reflecting 1914-1918 when infantrymen particularly well accustomed to war hardships were not afraid to crowd together under shells from a running barrage.

During the war years the intensity of the Viet-Minh attacks increased in proportion to the increase in the number of support weapons and in the number of troops engaged. Although during the first years of the campaign the support point having one or two platoons could still offer acceptable resistance, it becomes necessary to return to the standards established by our rules and to no longer conceive of a garrison having less than one company reinforced with heavy weapons.

But the experience of Na Sam demonstrated that the only acceptable formula was, as in Europe, a battalion-level center of resistance connected at various support points very close to one another.

Such a center of resistance is not, however, invulnerable and it must first of all withstand, without fail, prior enemy bombardment.

This primary truth has a tendency, unfortunately, of sometimes being toned down and the necessity of laying the foundation for the survival of fighters by fortifying the field was sometimes forgotten.

The General Commander-in-Chief stated that the terrain organization tasks "completely involve the responsibility of the Leader because the errors, omissions and imperfections are engraved in the terrain as unerasable deeds and cannot be corrected".

"In addition, a defective set-up, which requires work to rectify or modify, always has a disastrous effect on the troops".<sup>1</sup>

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See p. 25 for footnote.

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<sup>1</sup> Note on organization of the terrain, circulated in June, 1954, by the General Commander-in-Chief.

Certain rules of experience must, after all, be respected:

"As regards the position, its defense, a set-up on the opposite slope, whenever this is feasible, will make it possible to elude direct observation, will facilitate local or general counter-attacks, and will permit effective C.P.O. fire".

"The strong points should be camouflaged, their members must be increased and made invisible or dissimulated in the midst of fake organisms. For protection, modern engineering means and the necessary individual explosives should be put to use to replace the tools, without which the defense would be crushed".

"Finally, the defense should not unveil its long-range firing except on order, at the last moment. A firing discipline definitely must be instituted. Prior to the attack, it is also necessary to carry out short-range firing and artillery firing which should compensate somewhat for any deficiency in the infantry's volition".<sup>2</sup>

The importance of partitioning with a center of resistance should also be stressed. It is truly rare for the enemy not to be able to bite into our defenses and nothing can stop the enemy from doing this except for barbed wire and inside flankings.

But the presence of these obstacles does have its inconveniences: these obstacles seriously hamper the movements which the defenders must make in order to strengthen one or another point which is particularly threatened and, above all, in order to counter-attack.

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<sup>2</sup> Colonel X... Commander of G.M.

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Especially in Dien-Bien-Phu, many combat troops reported that the thickness and the amount of barbed wire greatly hampered them in counter-attacking and in picking up supplies which were dropped down to them by parachutes.

There is no doubt that the misuse of inside barricades presents serious difficulties but their necessity is not diminished and their use cannot be eliminated. On the other hand, not everyone should be given free rein in setting them up. The Commander of the center of resistance should set up the barricades bearing in mind any subsequent counter-attacks and should see to it that they are accurately laid out with any errors being rectified.

Regardless of the care which is taken to lay out a support point, the firepower and the obstacles generally will not be enough to halt the assaults, which quite often will be repeated during an entire night and will be accompanied by pauses permitting the bombardments to resume.

The defenders will therefore be brought under control because casualties will accumulate and also because supplies will diminish. It is therefore the firepower of the artillery and the mortar fire provided by neighboring centers of resistance that will ensure a heavy renewed firepower.

The commanders of the support points under attack, however, must be in a position to shift the fire in accordance with changes in the fighting, to renew firing whenever this is necessary, to stop firing if necessary on the portions of terrain which the enemy has been able to conquer. In brief, the commanders must continuously guide the artillery and the neighboring mortar platoons so that the advance attackers can be held in check under a network of trajectories as long as they do not fall back.

Success of this kind obviously depends on a good system of final protective fire and very careful set-up of mortar support between the centers of resistance,

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but it is just as necessary that the command posts be protected from poorly aimed shells and that a security radio installation be established at an alternate site.

The fall of two of the centers of resistance at Dien-Bien-Phu is probably the result of the rapid destruction of the two battalion command posts and the ineffectiveness of the members of the command which attempted to take the place of the D.L.O.'s. On the other hand, Viet-Minh attacks were stopped under other circumstances because a continuous liaison was maintained with the artillery and the neighboring centers of resistance.

ATTACK ON FORTIFIED POSITIONS - The Viet-Minh attack on fortified positions was characterized by such fury and efficiency that our staffs were often under the impression that the enemy was using new methods.

This is not true. In order to become convinced of this it suffices to study the account of the taking of a post or to read the Viet-Minh report concerning "The Attack of a Fortified Position". This report appears to be a plagiarism of German reports concerning attacks on fortifications by assault engineers: reconnaissance, approach, the implementation of surprise<sup>1</sup>, distraction activities, the opening and then the widening of a breach, dynamiting of openings. The concept and the execution of the operation do not deviate from orthodox methods and from what is already known.

The defenders of our posts, however, felt that they were dealing with "specialists" and not with ordinary troops. This impression was justified be-

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<sup>1</sup>The ease with which the Viet-Minh moved without noise right up to hand grenade throwing distance was particularly remarkable. Several times we found systems of individual holes about 50 cm. deep in the barbed wire and the mine fields. These holes sheltered the attack company or companies.

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cause the Viet-Minh organized its assault troops on demand<sup>1</sup>, instructed them for a long period of time, and trained them on mock-ups of the target.

The meticulous nature of the Vietnamese found particular advantage in night action which, as stated by our manoeuvre instructions, requires very careful preparation.

On the other hand, experience has shown many times that the enemy became disoriented when an unexpected occurrence disrupted the mechanism which he had so patiently set up. This fact was quite often the result of an alert given prematurely by one of our look-outs, the unexpected resistance of automatic weapon users, an unexpected reaction from positioned artillery, or else it was a question of a timely counter-attack or the existence of a blockhouse unknown to the Viet-Minh.

In brief, the best parry was a move which disoriented the enemy and caused him to fall back.

**SIEGES** - On several occasions<sup>2</sup> and especially at Dien-Bien-Phu the enemy had to launch his attacks in the form of an actual siege.

Using methods which had been applied both in 1915-1916 and during the Sino-Japanese War and at Sebastopol, the Viet-Minh has shown what fighting could be like in the area of the theater of operations where the adversary wishes to capture a key position regardless of the price.

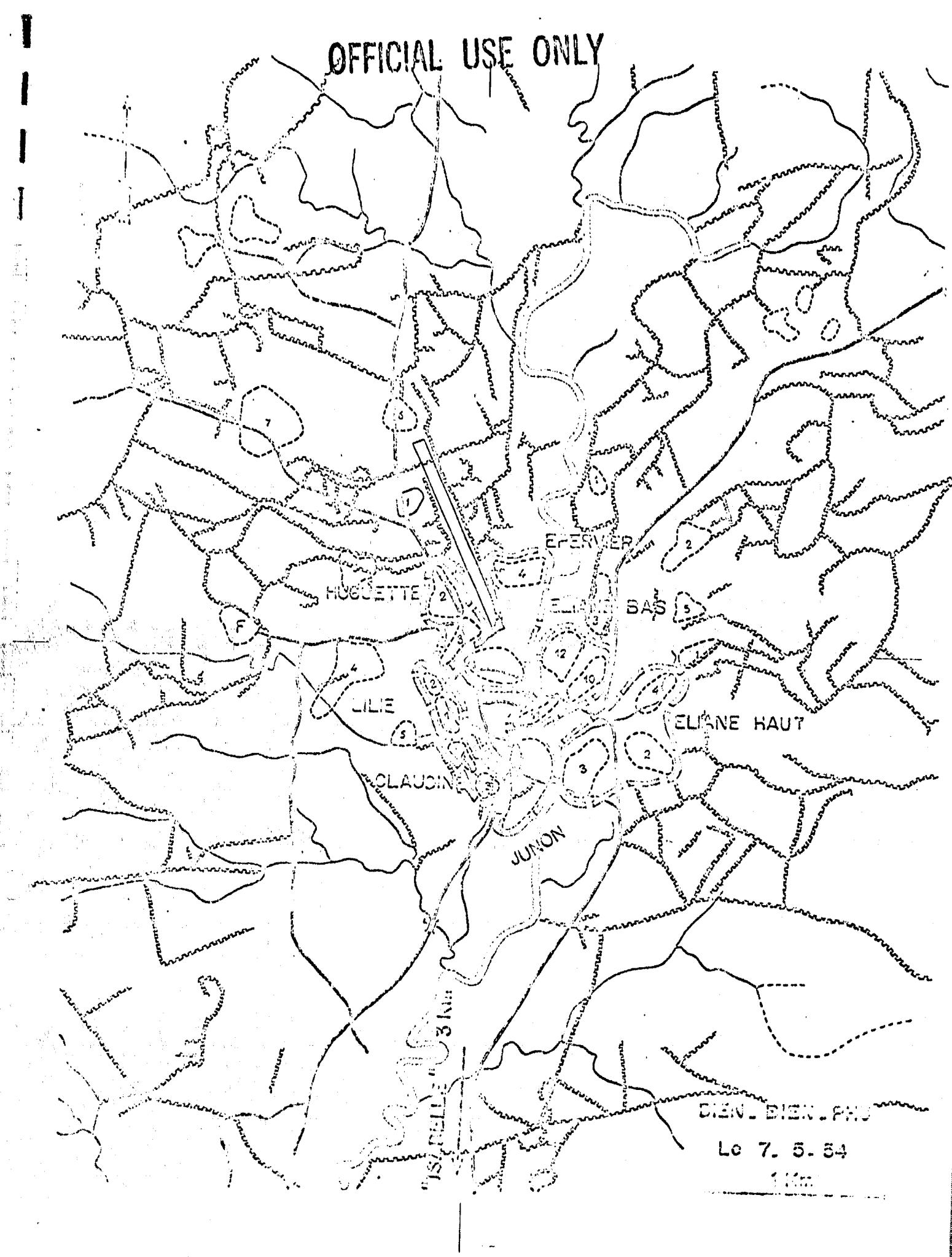
In the preparatory stages of the battle, the Viet-Minh stressed the necessity of initially organizing a large-scale blockade while camouflaging their preparations to the maximum.

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<sup>1</sup> See Viet-Minh report on attack of fortified positions.

<sup>2</sup> To a certain extent at Hoa-Binh, then at Laichau, and finally at Na Sam.

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Thus, on January 2, 1954, the Viet-Minh gave the following instructions to the troops who were to lay siege to Dien-Bien-Phu:

"In consideration of the enemy situation and the geographical situation, the troops will position themselves by applying the following principles:

"Very few covering troops; the greater part of the troops placed to the rear in a secret place outside the range of enemy artillery, so as to avoid casualties:

"Dig communications trenches in the billeting areas for anti-aircraft and anti-artillery defense, for purposes of protection".

"The Viet-Minh then passed to a phase of "simple pressure" characterized by the removal of some peripheral support points and then the extension and the obstinate installation of a system of trenches and firing positions.

Sufficient forces were maintained to preserve the territorial gains already acquired while most of the units reorganized several kilometers from the battlefield and the ammunition supplies were replenished.

This was followed by a "nibbling" phase during which the enemy alternated with strong attacks and simple pressure.

"Each attack presented the following characteristics:

A principal point of applied effort at night.

Minimum target: a battalion center of resistance, possibly two centers of resistance.

Pursuit of brutality by the combination of fire and the effect of mass infantry going as far as to submerge the opponent.

Success sought right from the first night.

Neutralizing enemy artillery.

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Some diversionary actions".<sup>1</sup>

It was always, therefore, use of the same methods, but the methodical advance of the Viet-Minh resembled the hand-to-hand combat instituted by Vauban: encirclement, with the defense system turned outwards to prevent the arrival of help and inwards to prevent exit.

Then, covered by a helmet, sheltered by gabions, the Viet-Minh foot soldier rolled his stuffed gabion in front of him and drove towards the trench site, to then be joined by others moving in a parallel fashion.

The ways of offsetting this encirclement consist first of all in a maximal slowing down of the tightening of the enemy personnel.

It is therefore necessary to set up a network of advanced posts as far away as possible.

"The purpose of these advanced posts should be (besides the time which they make it possible to save for setting up the position) that of slowing down and hindering the enemy's reconnaissance efforts."

"They shouldn't, therefore, present themselves in the form of an axial defense or by successive lines, but in the form of surface defense. The outskirts should be watched.

"The zone of the A.P.'s should embrace the look-out posts overlooking the position and the approaches leading to the position should be both booby-trapped and defended by various ambushes".<sup>2</sup>

There is no other remedy against both the methodical pushing out of parallel advances and trench installation than a powerful counter-attack making it

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<sup>1</sup>Study of the G2 of the National Vietnamese Land Forces on the battle of Dien-Bien-Phu

<sup>2</sup>Colonel X....Commander of G.M.

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possible to largely clear away the particularly threatening sector.

During the siege of Dien-Bien-Phu we did indeed try out several different procedures without success:

- mortar and recoilless cannon fire on the enemy trenches.<sup>1</sup>
- mines laid by our patrols in enemy lay-outs, taking advantage of the fact that the enemy generally evacuated the advance trenches during the day.
- air bombardments.

We therefore arrived at the same conclusions reached in the 17th and 18th centuries: as soon as the enemy has covered trench we cannot fight against the ant-like work of the attackers unless we carry out powerful attacks, or, even better, by raising a blockade of the area from the outside.

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<sup>1</sup>The destruction rendered to the enemy was only slight. In no case did it hinder their pursuit of work.

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## CHAPTER III

### RELATIVENESS OF SOME OF OUR TACTICAL CONCEPTS

One of the clearest lessons learned from the campaign is that our air power despite its efforts and sacrifices, was not able to inflict any decisive blows on the Viet-Minh and also that the Viet-Minh infantry, deprived of air power and strong means of firepower, has obtained unquestionable victories.

RELATIVE EFFECTIVENESS OF AIRPOWER - This statement can be found in one of our regulations: "Air control over the theater of operations chosen by the command constitutes a necessary condition for the success of any large land, sea or combined operation".<sup>1</sup>

Has the Korean campaign or the campaign of Indochina completely contradicted this tenet or is it only necessary to make a few changes in it?

Before any discussion is carried out, one essential fact must be stressed: In contrast to European theaters of operation, the number of forces present was relatively small and the troops were excessively spread out. Also, the amount of occupation with regard to the area of the terrain was minute.<sup>2</sup>

Air bombardment, therefore, could not produce the same destructive effects as in Europe, nor could, they bring about the same results from a tactical viewpoint.

Nevertheless, an air force can have freedom of the skies, as was the case in Indochina. But if the air force employs an insufficient number of planes it will not be able to impede enemy intentions even slightly.

<sup>1</sup> Provisional report on infantry fighting in cooperation with other branches of the military.

<sup>2</sup> A vivid estimate shows that the density of occupation for all of Indochina amounted to 1 fighter from both sides for every 2 square kilometers.

In the deltas this ratio was obviously much higher, but never, however, coming close to approaching that of European fronts.

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Without a doubt there is no better proof of this than our efforts to prevent the Viet-Minh from using provincial route 41 before and during the battle of Dien-Bien-Phu. We were not at all able to cut off this axis which was essential to the enemy because we did not have enough bombers to create a string of terrain lines and, above all, to maintain them.

During the entire campaign we were in complete control of the air space, but we consistently lacked airplanes for assuring all of the direct support missions and indirect support missions which were required. Thus all of our planes would have been needed to attack the supply sources of the Viet-Minh between the Chinese border and the zone of Lang-Son - Thai-Nguyen. We would have needed 200 additional bombers to relieve Dien-Bien-Phu of enemy pressure. We waited in vain for these planes.

The terrain factor also was to our disadvantage because, in the forests of the elevated Tonkin area and of Laos, the enemy easily escaped from our aerial reconnaissance.

Besides, the climate of Indochina caused a considerable reduction in the number of hours our planes were used. The Tonkin drizzle, in particular, made it practically impossible for us to take off before the end of the morning.<sup>1</sup>

These remarks, of course, are somewhat commonplace and they could be made in many regions of Europe. They constitute, nevertheless, a basic number of factors which explain why "air superiority" was not decisive.

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<sup>1</sup>Conditions on one side of the Annam mountain chain never were the same as those on the other side. At the time of the battle of Dien-Bien-Phu it was a rare occurrence for the route of departure and the mission site to benefit simultaneously from good weather conditions.

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Still other factors, however, come into play and we were able to ascertain that the simplicity of enemy logistics reduced significantly the effectiveness of the air forces.

"We failed in Indochina as regards the attack on communication networks which is so important in a western theater of operation".

"Surely, after vey heavy expenditure in our potential, we were successful in curbing, sometimes markedly, the routing of reinforcements and supplies. But the use of thousands of coolies to repair the gaps, the installation of numerous diversions, installation of revetments on the waterways, the utilization of covers and of night permitted the army of masses to win over technology".<sup>1, 2</sup>

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<sup>1</sup> General X... commanding the Air Forces of the Far East.

<sup>2</sup> In this regard, we find the following remarks in a study made by the G2 of the General Staff 6f the Ground Forces of Vietnam (F.T.N.V.) concerning the battle of Dien-Bien-Phu:

"The Viet-Minh has put large facilities into operation to assure the installation and maintenance of its communication networks".

"It used the entire Engineer Division 151 belonging to Heavy Division 351. Its battalions were used on route No. 41 and then its extension towards Dien-Bien-Phu".

"Combat units took part in certain works. In January, 1954, Regiment 88/308, in particular, worked on building the Tuan-Giao - Dien-Bien-Phu Road".

"But essentially the manpower consisted of some 10,666 peasant workers, augmented by from four to five thousand recruits from Regiment 77. The totality of these workers, organized into battalions and companies, was spread out near the critical points of the primary axis".

"The effectiveness of this system was such that our bombings, on this nevertheless sole axis of Co-Noi to Dien-Bien-Phu (i.e. over 200 kilometers), were never able to stop Viet-Minh transports".

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Our actions based on the use of coolies by the enemy, who carry provisions and munitions to the troops, sometimes travelling many hundred kilometers along the jungle trails, also proved to be fruitless.

"By its mobility, facility and speed in concentrating and then splitting up, the enemy has almost always given the impression of disappearing in space during the night. Certainly the Viet-Minh battalions and coolies do not possess lorries, these being replaced by the trotting steps of their bearers. Along their specially prepared and cut trails, they walk at 6 or 7 km an hour, travelling 50 km a night, with little risk of meeting us and requiring no particular security measures".

The enemy sometimes used ingenious means of transport:

"Some sections of the line of railway were restored by the Viet-Minh. They moved small rail cars there which were pushed ahead by coolies running barefoot on the ballast".

"Each coolie pushed along a 10-kilometer section. He was paid 2,000 Ho Chi Minh piasters (i.e. 200 Bao Dai piasters) per night for this work. The pace was quick: 10 to 12 kilometers. On downward slopes the coolies stepped onto the footboards; on level terrain and on upward slopes they pushed and ran. We also saw on the route several jeeps mounted on wagon wheels moved 30 kilometers stretches on the railway".<sup>1, 2</sup>

Here is another example of these peculiar logistics. It has to do this time with evacuating casualties.

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<sup>1</sup> Story told by a captured officer.

<sup>2</sup> All types of means were used for supplying the battle of Dien-Bien-Phu, including bycycles carrying 30 kilograms loads and set up in columns several kilometers long. Carts, horses, and sampans were requisitioned and used simultaneously (according to a study by the G2 of the F.T.N.V. on the campaign of Dien-Bien-Phu).

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"I was carried on a stretcher by coolies belonging to the People's Troops. They carried (two of them) a wounded man over a stretch of 20 to 25 kilometers on a tent canvas suspended from bamboo at a speed of 6 to 7 kilometers per hour".

"Each man carried a forked stick in his hand 1 meter 60 centimeters long on which he supported himself in order to shift the load on his shoulders every kilometer....".<sup>1</sup>

The sobriety of the Viet-Minh fighter and the lightness of the supplies and equipment carried rendered the transport requirements much slighter than by our standards.

The per capita and per diem weight of supply items for the units of the Expeditionary Corps amounted towards the end of the campaign to approximately 9 kilograms.

It is obviously very difficult to compute this extremely theoretical data for the Viet-Minh Units. Nevertheless, the information gathered during the operation of Dien-Bien-Phu and which have to do with the depots set up by the enemy to provide supplies for the battle make it possible to estimate the needs of the Viet-Minh soldier at a maximum of 3 to 4 kilograms.<sup>1</sup>

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<sup>1</sup>Here is how a comparison can be made between the items of the supply rate.

Type of Supply	Far East Ground Forces (F.T.E.O.) Units Data computed for Tonkin for the first half of 1954	Viet-Minh units data computed for Dien- Bien-Phu
Ammunition	1 kilogram 800 grams	0 kilogram 400 grams
Material	0 " 400 "	0 " " 100 "
Corps of Engineers	1 " 400 "	0 " 60 "
Quarter-Master Corps	2 kilos 175 "	1 " 800 "
Gasoline	2 " 850 "	0 " 900 "
Signal communication	0 kilogram 200 "	0 " 50 "
Miscellaneous	0 " 100 "	?
Total	9 kilograms	3 kilograms 300 grams

The basic unit used for calculating the weight of supply items of the Viet-Minh is that of the divisions actually engaged.

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An adversary requiring such small needs and making such slight demands on motorization<sup>1</sup> would once more defeat the purposes of air power, especially if he would make as successful use of passive defense methods as was done by the Viet-Minh.

For: "in order to elude our firepower, the adversary had to first of all pay very careful attention to camouflage".

"The men had an absolutely automatic reflex regarding concealment. Each soldier carried a small iron-wire disk on his shoulders. When the troops went through a zone in which airplanes could uncover them, the Viet-Minh soldier automatically (without even receiving the slightest order from a non-commissioned officer) garnished the camouflage set-up of the man who preceded him with branches or herbs of the color of the zone being traversed".

"The camouflage was altered according to each change in the terrain".

"At halts, the camouflage was carried out with the same precision in the caves, forests, and underground installations".<sup>2</sup>

One of our airmen wrote:

"In my career I have had the opportunity to fly over Moroccan, Italian, German, even English adversaries. I never had such a sensation of complete emptiness as above the rebel territory. I assume that the Viet-Minh have a very well organized patrol network because it was extremely seldom that an enemy

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<sup>1</sup> In November, 1953, the Viet-Minh motor park reached 600 vehicles, of which only a fraction were operable. Its 9 motorized companies had about 300 trucks.

At the same period of time, the motorized park of the Expeditionary Corps included approximately 23,000 general-purpose vehicles, without mentioning combat vehicles and the means of the Armies of the Associated States which had a total of more than 50,000 vehicles.

<sup>2</sup> Extracts of three reports from officers.

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detachment was surprised, even during drills and on the far-off rear".

"Surprise can only be achieved by skimming the ground, but after the time is taken to regain altitude and to manoeuvre for a strafing movement the enemy has disappeared".

"There is only one phase of the battle when the Viet-Minh come into the open: for the attack".

"During such occasions there is only the barometric emptiness of day and night, the intense stirring of an invisible piece of sky".<sup>1</sup>

The "bottle opening" dug to fit the shape of the Annamite protected its occupant in an extremely efficient manner. Even napalm only had very reduced effects as soon as the Viet-Minh became aware of the protection afforded by a simple cover made of leaves.

The lessons from the campaign of Indochina have therefore corroborated those of the Korean war by contradicting the extremist thesis of Douhétism and in pointing out that air support must be extremely powerful in order to constitute a decisive trump-card.

This support is indisputably necessary but it does not suffice to assure success.

INFANTRY SKILLS - The sentence which opens our "Instructions on infantry combat in cooperation with the other branches" is begging the question: "The Infantry, although equipped with numerous and varied organized means, cannot expect to conduct the fighting alone. Under all circumstances it needs the aid and the support of the other branches".

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<sup>1</sup>Colonel X

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But most of the fighters of Indochina would adopt this remark made by the leader of an Artillery Squadron:

"The best infantry at this time is without a doubt the Viet-Minh infantry with its two governing qualities: adaptability to change and punch. The Viet-Minh infantry is used to doing without the support of the other branches".<sup>1</sup>

Other statements in our instructions appear to have to be toned down when they apply to units not having many needs and having been trained for years in jungle warfare and in night attacks.

For example, in order to attack fortifications we believe that the "destruction of enemy installations is carried out by air power and by heavy artillery".

"No infantry action can be undertaken before this type of destruction has been exerted to the fullest on the position which the infantry is to engage".<sup>2</sup>

Now, the Viet-Minh only demanded that the overthrow of our posts be carried out by its foot soldiers, who would themselves carry the necessary explosive charges to the desired position, and by a few cannons.<sup>3</sup>

Our infantry manoeuvre instructions admit certain exceptions to the capabilities of the branch, but these exceptions were the rule for our adversaries.

We can read thus the following definition of the possibilities of the foot soldier:

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<sup>1</sup> Leader of Squadron X... Commander of an artillery group of a corps of naval constructors.

<sup>2</sup> Report on infantry fighting in cooperation with the other branches.

<sup>3</sup> In a Chinese document of 1943 we already find this remark, which the Viet-Minh with our limited means, to use artillery to destroy enemy defenses, would be wrong. This work belongs to the infantry or to the engineers who would primarily use "explosives".

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"The infantry is suitable for fighting on all terrains, under all kinds of weather, during the daytime as well as at night; however, its possibilities are greatly reduced in very open terrain; nevertheless, the infantry maintains, even during daytime, a certain manoeuvre capability regardless of the air situation".

"The infantry usually fights in cooperation with the other branches. It takes advantage of the favorable circumstances created by the firepower of the other branches as well as its own firepower; it benefits to the maximum from the action of the armored equipment which it is called upon to support, if necessary; it can fight with its own means".

As regards the enemy foot soldier, we have noted not only a remarkable versatility in manoeuvering but also a consistent skillfulness in counter blows.

"The great surprise of this war has been the capacity of adaptation of the Viet-Minh infantry to all types of combat circumstances".

"The Viets have adapted themselves at an incredible speed to mine warfare, to napalm, to all forms of strafing and to the fire of heavy weapons. They have been able to retort, which was sometimes diabolical but always intelligent: the effectiveness and the simplicity of their fortifications, as well as of their passive defenses against napalm, bombs or shells, are, it must be admitted, masterpieces of their kind".

"Thanks to having become accustomed to a deluge of fire, the enemy counter-blows became perfected and there a race of fighters was developed which had become both aviation and cannon-proof".<sup>1</sup>

Camouflage, in particular, permits the enemy to escape our blows many times

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<sup>1</sup>Extracts from three officers reports.

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but this camouflage did not only have to do with individuals and basic cells.<sup>1</sup>

It was generally practiced by entire Units.

We were able to see, for example, a Viet-Minh battalion completely hide itself in rice thatches (very similar to wheat thatches): each man had dug an individual hole, carried the earth to a canal and placed clumps of vegetation on top of his head. The next morning this battalion literally arose from the ground and had no difficulty whatsoever in destroying the last two companies of an allied column which was walking along these rice-fields.

At Dien-Bien-Phu the enemy was successful in completely hiding from our view the positions which were occupied before the attack by the 40,000 men of the attack corps. This was possible, indeed, because of terrain which was particularly favorable for purposes of concealment.

In other aspects the performances of the Viet-Minh infantry were no less remarkable.

Whereas we demanded that the troops march "under good conditions of security, routing and temperature, over a stretch of 25 kilometers",<sup>2</sup> a full Viet-Minh division was able to march 450 kilometers in fifteen days on mountain paths, carrying their supplies on their backs, marching entirely at night.

We required that, prior to the attack, the battalions charged with carrying out the attack be kept in reserve and at a short distance from their starting base. But we do not train our infantry on advances which were as harsh as those carried out by the Viet-Minh units when they attacked a post.

For example, at the time of the attack of Gia-Loc, a reinforced regiment

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<sup>1</sup> See preceding paragraph.

<sup>2</sup> Infantry regulations.

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moved more than 15 kilometers during the first part of the night, dug shelters at 50 meters from the defenses of the post and ensured complete surprise by attacking around 4:30 A.M.

Such accomplishments were not exceptional and most of the Viet-Minh battalions not only knew how to move and silently dug combat positions but their specialized teams were able to clear mines and to make openings in the barbed wire without the slightest noise.<sup>1</sup> Then, at the time of the attack, the enemy was able to count on the impact of shock.

All of these remarks do not contradict our Infantry Regulations, where, in particular, we find this sentence:

"The primary role rests upon the Grenadier-Riflemen."

"The most powerful fire is devoid of effect if the Grenadier-Rifleman is not animated by the will to use as a shock element".

Nevertheless, we must acknowledge that the Viet-Minh have given to the large masses of its Battle Corps (about 100,000 men) qualities of simplicity, physical resistance, stubbornness and habituation to firepower, to the night, as well as to close combat, which are the endowments of a small elite (paratroopers and commandoes) in the large armies of Western Europe.

Certainly the Viet-Minh achieved results of this magnitude in 8 years of war and thanks to the ruthless selection which preceded the training of its cadres; it is true that it has been forced into night fighting and jungle warfare, but Vo Nguyen Giap has been able to create an infantry which is perfectly adapted to the terrain and to the conditions of warfare in Asia.

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<sup>1</sup> At the time of the attack of Tower X... at Tonkin on November 28, 1954, at 2 A.M., the alert was given by a watch dog while the two dynamiters were at the foot of the bridge with their charges. They had passed through the defenses without being seen or heard.

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If, therefore, there is a major lesson to be drawn from the fighting in Indochina, it is indeed the capacity of resistance and the offensive power of an infantry which has been instructed and trained in the same way as that of our enemies.

We must, besides, refrain from underestimating the capabilities of troops trained under the same discipline.

Our intelligence services are trained in "the method of possibilities;" it therefore remains for them to calculate these possibilities not according to our European Armies but according to what we have learned in Korea and in Indochina.

Finally, the notion of "limited extent of an offensive", which springs from our tactical concepts, from our logistical methods, from our aerial deployment, should not be applied, without great changes, to armies using Viet-Minh or Chinese methods for moving, supplying themselves and for fighting.

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## PART TWO

### BRANCHES AND SERVICES

#### CHAPTER ONE

##### THE INFANTRY

Moreso than the other branches, the Infantry and the Paratroopers have acquired in Indochina an experience covering all forms of combat, because this was primarily a foot soldiers' war and it is normal for the amount of knowledge accumulated by those men who fought on foot to be considerable.

The infantry runs the risk, therefore, of being influenced over a certain number of years by the lessons which they will have drawn from the fighting in Indochina, and this is so much the more correct because practically the totality of its lieutenants and captains and almost half of its higher-grade officers took part in the campaign, quite often on two occasions.

Does this constitute a danger or, on the contrary, can the infantry enrich itself through its experience in Indochina?

There still remain the teachings concerning the appropriate tactics of the Branch and concerning the various units. Discussions on this topic can, however, be conclusive if we are willing to make the distinction between the notions which are common to all of the forms of conflict and the notions which, on the contrary, were peculiar to the war of Indochina.

ARMAMENTS - The length of the campaign and the diversity of the material utilized<sup>1</sup> resulted in the officers and noncommissioned officers experimenting on the

<sup>1</sup>See p. 45 for footnote.

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<sup>1</sup>In the beginning simultaneous use was made of part of the French armaments existing prior to 1939 in Indochina, of English armaments, sometimes of Japanese armaments. Then came newly-manufactured French weapons, and finally material from U.S. aid.

spot with an extremely varied armament. It is therefore possible to present a summary of the opinions by taking up a position, on the most recent weapons.

First of all, the MAS 36 rifle has been subjected to severe criticism.

"The MAS 36 rifle has proven to be of disastrous inefficiency against a massive attack such as the Viet-Minh attacks. Being too heavy to be used as an individual weapon, it is totally ineffective for combat, both because of its lack of accuracy and its rate of fire.

Users of this weapon do not go as far as to negate its effectiveness when it is placed in the hands of a sniper, but they have noted that the traditional weapon of the foot soldier did not provide him with sufficient security when it became necessary to counter an enemy assault at a few meters distance.

This opinion obviously admits of some modifications but we cannot overlook the lesson drawn from innumerable combats carried out even on a hand-to-hand basis where the essential factor was the number of bullets which could be fired within a few seconds. We must therefore acknowledge, as a minimum, the necessity of reducing the use of rifles and increasing the use of automatic weapons or semi-automatic weapons.

Some officers propose more radical solutions. The Leader of Battalion X believes, for example, that 3/4ths of the grenadier-riflemen should be equipped with U. S. 30-caliber carbines. The remaining one-quarter, being made up of the best riflemen, would receive semi-automatic rifles. Others would like to see the MAS 36 replaced by machine pistols, while some semi-automatic rifles would be set aside for snipers.

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Several combinations are consequently possible, as long as the "immediate" firepower of the combat groups can increase considerably.

The MAT 49 machine pistol is unanimously praised as to its value. Nevertheless, two criticisms are made of it:

- the fragile nature of some parts: peep-hole protector, shutter, cartridge clip spring,
- the difficulty in refilling the cartridge clips.

"This difficulty", writes Commander X, "is probably the cause of the success of Chinese-style attacks". The first wave causes an emptying of the cartridges, the second wave passes unharmed.

"One solution would be to supply the units with loaded, dispensable cartridge clips".

The 1924-1929 machine rifle has proven its reputation:

"It is an accurate, sturdy, powerful and light weapon, remarkable in its simplicity. But our good-old machine rifle has a weak point: its cartridge clips are heavy, burdensome and rather fragile. It is these cartridge clips which cause most of the firing accidents".<sup>1</sup>

This defect has been known for years, but the foot soldier deplores the fact that a remedy has never been found.

Still other criticisms are made of this weapon:

- The peep-hole (by the way, just as the rifle peep-hole) does not permit aiming when the light is insufficient.

A carriage stock, identical to that of the British machine rifle, is lacking.

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<sup>1</sup>Lieutenant X. Platoon Leader.

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However, a certain number of officers criticize the model 1924-1929 machine rifle not on matters of detail but rather as regards the principle of its box-magazine feeding:

"In my opinion, the 1924-1929 machine rifle has an enormous defect. The feeding of an automatic weapon by box-feeding results in:

1. creating frequent interruptions in firing,
2. immobilizing a certain number of men in refilling the box-magazines (I would like to stress the small number of box-magazines which are filled in practice by the crews of a machine rifle during an attack, especially at night).
3. adding the weight and the clumsiness of the box-magazine itself to those of the ammunition.

"These reasons make me prefer the light machine gun, which also allows its crews to fire, to our machine rifle".<sup>1</sup>

The same problem faces the machine pistol, but in the case of the machine rifle a rapid solution is necessary to this problem. Is this not one of the means for countering mass assaults and submersion by sheer numbers?

Diverse opinions have been expressed on the 31 A machine gun (Reibell).

Battalion Leader X, for example, is in favor of this weapon:

"It is a remarkable weapon, as the machine rifle of 1924-1929 and permits, in addition, firing at night. In an established position it is advisable to use the round cartridge clip. The 40-round cartridge clip is very satisfactory when moving".

"The U.S. 30 machine gun is not better than the 31 A, and, besides, it requires more complicated supplying of ammunition".

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<sup>1</sup>Lieutenant Y. Company Commander.

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But Lieutenant Z expresses a different opinion:

"Even though the 7 mm. 5 machine gun is an effective weapon, operates easily, and is very good for defensive fighting, it does not appear to be adapted to offensive fighting. The tripod mount is heavy and difficult to handle. This machine gun could be replaced advantageously, in open country, by a machine gun similar to the U.S. 30".

Would the 52 automatic weapon be the compromise between the machine rifle and the machine gun which most of the cadre personnel seek, in particular to counter mass attacks? This automatic weapon was not used in Indochina until the hostilities had ceased and it is therefore not possible to know of its actual combat performance.

Lieutenant Y states that "the 57 mm. S. R. cannon has been greatly valued by the French soldier, who is a novice with respect to recoilless cannons".

This opinion is shared by many of those who have used the 57 S. R. in operation (in flat regions in particular) and they consider it to be an excellent weapon. Some persons go as far as to see in it the essential weapon of the Company Commander.

Others, however, object to the fact that it is too heavy and too easy to be spotted. They believe that the 73 mm. antitank rocket launcher would replace it quite well.

Light weapons with curved-trajectory fire have not deceived their users. One of them, in particular, wrote:

"Against an enemy who has a remarkable feel for the terrain, infantry weapons with flat-trajectory fire often only have a morale effect (with the exception of the 57 S. R. cannon). Curved-trajectory fire weapons have proven to be more effective".<sup>1</sup>

<sup>1</sup> See p. 49 for footnote.

# OFFICIAL USE ONLY

<sup>1</sup>Captain X

The discontinuance of the 50 mm. grenade launcher was regretted by some, even though it was deemed that this weapon had lost its raison d'être since the time when rifle grenades were available which had sufficient range.

Some individuals believe that "the 60 mm. mortar used at rather short distances can be replaced by a group with several rifles launching grenades. This would bring about more rapid intervention and would be just as accurate".<sup>1</sup>

This 60 mm. mortar has been the object of several criticisms aimed not at the weapon itself but at its possibilities of utilization.

Lieutenant N, for example, writes:

"The 60 mm. mortar, which is ineffective in humid rice-fields, has proved to be quite interesting on the defensive. It can be fired in one minute and should be used for reconnoitering fire or for immediate explosive fire in front of the position of the unit: 80 to 100 meters. The 81 mm. mortars of the Battalion and the artillery should be used for more distant missions".

On the other hand, Lieutenant R states that "the 60 mm. mortar, especially when used alone because we could not carry our two mortars into operation with us, has hardly had any other purpose than that of illuminating the battle field at night. During daytime it has not been very effective".

Besides, battery operation was difficult on wet terrain and the enemy often appeared at a very short distance. It was therefore often more advantageous to attack the enemy by using grenade launchers which can be fired from the shoulder".

Another officer expresses an opinion which is even more categorical, "for

<sup>1</sup>Captain Y

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distances greater than 400 meters it was quicker to use a 105 mm. fire, which is almost always well adjusted, than to adjust a 60 mm. fire and, even moreso, than to adjust an 81. mm fire".

"On the whole, these weapons were used essentially for illumination and units could most probably be supplied with means of this type without having to burden themselves with mortars".

It should also be noted that the difficulties in transporting mortars and especially in transporting their shells often resulted in one barrel out of two being left behind.

"It is preferable to have only one mortar available with a good supply of ammunition than two mortars with only a few shells".<sup>1</sup>

The discontinuance of the 60 mm. would not therefore be very much felt if the platoons could transport a sufficient number of rifle grenades.

On the other hand, the lack of enthusiasm of certain officers for the 81 mm. mortar cannot be disregarded.

Commander X gives the following reasoning behind the lack of enthusiasm:

"When I took command of the battalion I was surprised by the slight confidence which the cadre had in their 81 mm. mortars which systematically required artillery fire whereas mortar fire was often sufficient to reach the objectives".

"These vagaries were the result, in my opinion, of the slight confidence which the company commanders and platoon leaders had in the mortar crews and also of the lack of training: everything which does not have to do with direct-view flat-trajectory fire should be the domain of the specialist and should

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<sup>1</sup>Captain Z

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therefore be entrusted to the artillery".

"Nevertheless", stated Commander Y, "the 81 mortar is the salvation of a unit which is not provided with artillery and is the complement of the artillery".

It seems therefore that our cadre should relearn the rules of 81 mm. mortar fire and reestablish confidence in this weapon by attending well-conducted firing schools.

EXPERIENCE ACQUIRED BY THE CADRES - Two facts should first of all attract our attention.

In the first place, and despite the frequent passing of battalions from one territory to another, the infantry cadres were familiar above all with the aspects of the deltas and the coastal plains of Vietnam. Most of our forces, in effect, were always located there, so that relatively few officers had experienced fighting in open areas and in mountainous, forested or exclusively marshy zones.

It follows that the experience of the infantry is imbued with recollections of a war on flat terrain, horizons limited by the cover of villages, by manoeuvres which are narrow, slow, short-range, dallying around the checker pattern of our posts and in the invisible checker-board pattern of the politico-military set-up of the Viet-Minh.

In the second place, the cadres are torn between two opposite feelings. Some doubt the value of the lessons which they have acquired, others consider that the lessons are of high educational value.

Captain X (two trips) states, for example:

"There is good reason to make the cadre and the troops completely unlearn the combat methods employed in Indochina which do not resemble at all those of

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a European theater of operations".

"The absence of aviation and armored equipment in the case of the enemy, and, in particular, artillery (except at the end of the war and only at very localized points) has forced, especially on the young, certain essential notions: the need for camouflage, extensive use of tools, flexible adaptation of formations to the terrain and the combat phase taking place.

"This unlearning treatment has already become necessary in the case of officers who, after a first stay, took part in manoeuvres with their units from metropolitan France or from North Africa".

But Lieutenant Y (two trips) expresses the opposite thesis:

"Upon returning from Indochina and having been given the job of instructor at the School of Saint-Maixent, I tried in vain to attract the attention of my Battalion Leader concerning the lessons learned during 27 months of duty, 18 months of which were as Platoon Leader and Post Leader, in a battalion of the Foreign Legion".

"During two years of stay I heard each time, as a theme song, that combat in Indochina distorts the young officers".

"A certain amount of truth in this saying must be recognized because fighting in Indochina had nothing in common with the school exercises taught on the basis of recollections of French or Italian campaigns".

"There is a little truth in this but it is essentially false and one should rather say "combats in Indochina form the young officers", because in the event of fighting against an enemy coming from the East, we find numerous points in common with what we have known in Indochina".

Colonel X (several trips) also opines the same when he writes:

"We must counteract vigorously this tendency which seems to be developing,

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above all in the case of those persons who have not fought in Indochina, and which consists in thinking that the Army has unlearned warfare, the true warfare, that of regulations and tactical themes, without doubt".

Does the Infantry therefore run the risk of being divided up into "Indochinese" and "Europeans", the former being strong as a result of an experience the existence of which cannot be negated, whereas the latter, meditating on the war of 1939-1945 and a bit on the Korean War while at the same time weighing the possibilities of modern armaments and material, would relegate the campaign of Indochina to the level of colonial campaigns and would perhaps invoke the precedent of the Army of Africa which was beaten in August 1870.

A division of this type need not be feared, if we make a distinction between the forms of combat which the infantry should recall and the forms which it should forget.

Besides, the value of the lessons of Indochina is extremely variable, according to the level we place ourselves on and the following statement reflects this relativity quite well:

"The experience acquired by the infantry was beneficial at the low levels: squad, platoon, combat company. This experience was dangerous at the battalion level. It was disastrous on upper echelons as regards even the tactics of the armed Branch".<sup>1</sup>

NCO's, platoon leaders and even company commanders learned a great deal because the fighting in which they took part was generally carried out at a short distance, a distance at which the qualities or the defects of the organizational set-ups and the material assert themselves.

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<sup>1</sup>Captain X (two trips).

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First of all, these subordinate cadres noted that the organization of their units and their corresponding organizational charts did not have a firm meaning and that they themselves were not dedicated to the rigidity of a formula.

They weighed the advantages and the disadvantages of the various categories and if their preference went as a whole to the quaternary-type combat they were nevertheless aware that the important factor at their level was the number of men present, the number of weapons which can be used, and the quantity of ammunition which can be carried.

The quaternary category did not satisfy them except during periods when the effective numbers were great. Or else they preferred the ternary category and had nothing against the setting up of temporary groups based on the terrain, their mission and their armaments.

In addition, they weighed the importance of training because they had felt the handicap of having troops who had been too hastily trained and having cadres which did not include a sufficient number of low-grade NCOs.

In particular, the recollection of companies having only one officer, platoons led by young sergeants, and squads led by inexperienced corporals or by privates first class should assist them in realizing that the same events could reoccur in a European war if the training of reserve personnel (troops and above all cadres) is not carried out in a serious manner.

In the tactical sense, all of the fighters of Indochina should strive not to forget the implementations of the Soviet-Chinese doctrine which the Viet-Minh used many times.<sup>1</sup>

They should, of course, maintain the reflex of perseveringly reconnoitering

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<sup>1</sup> See part one of this volume.

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a dangerous zone, breaking through enemy camouflage, and, above all, reacting instantly when the enemy appears.

They should remember the thousand shapes which security had to assume during the campaign and, in particular, they should teach the methods which are not very much used in metropolitan France: pile drivers, patrols, preventive ambushes, etc.

Certainly the absence of airplanes and tanks as regards the enemy could have caused them to lose from view the rules of protection against air danger and armored danger. It would also suffice to remind them of how the Viet-Minh was able to protect itself from our bombers and fighter planes and how it attacked our tanks when they came within the range of the Viet-Minh.

But this reeducation in certain concepts will not require a long time because at the lower echelons of the infantry it is essentially sufficient to require camouflage, dispersion, the individual fox-hole and skilfull use of rocket launchers and grenade launchers.

On the other hand, the open-field foot soldier and his immediate leaders have become aware of the terrible harm caused by mines and booby-traps and they have felt what was expressed by the Colonel.<sup>1</sup>

"Mines and booby traps have an effect, of course, because of their material efficiency. They also have an effect owing to the tension in morale of the fighters. Their sudden effect, which may occur at any moment, the uncertainty of the wounds which they inflict (the seriousness of which is quite variable), result in a fear which is perhaps involuntary but which is certain."

"These are indeed weapons of neutralization".

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<sup>1</sup> Zone commander at Tonkin.

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"It is extremely difficult to fight against mines on any terrain. The customary mine fields of European wars can be overcome by means of methods which have already been tried out and are known".

"The laying of crude mines and elementary traps by determined guerrillas presents a problem which cannot be solved in a logical manner at the present time. This is the reason why, in a particular case, it is impossible for an army to solve the more extensive problems of surface warfare by customary and strictly military methods".

Thus, the experience which has been acquired by all of our troops must be retained and passed on to our recruits because of the fact that mine warfare can give us a valuable means for stopping enemy advances during the first few days of combat.

At the battalion level the value of the lessons to be learned from the war of Indochina is already more limited.

The quaternary order, which has been very much tried out, has proven itself and, as we have seen, has obtained unanimous approval.

But combat conditions as well as the manner in which the command company was organized often made it impossible for the battalion commanders to make their personal action felt: at the most they had available for operations only 2 81 mm. mortars and two 57 SR cannons (when the latter had not been distributed to combat companies). Battalion commanders, therefore, were practically deprived of their own firearms and some of them lost the habit of using heavy weapons.

But the reeducation must become more important in the field of tactics because battalion manoeuvering in Indochina involved speeds and forms which were very much different from what is done in Europe.

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First of all, the unit almost always acted alone and even when it fought within the framework of a mobile group, the terrain was such that 5 to 600 meters of ricefields or the thickness of a village separated the unit from its neighboring groups at a distance of at least a few kilometers.

The battalion, forced to follow the itinerary which it was able to discover and only hearing the reverberations of the fighting carried out by others, advanced on its own much as a vessel whose waves very rapidly cover up the sea course, because the rebels could reappear behind it in a generally quite brief period of time.

The difficulty of the terrain imposed a professional speed and the spreading out of the columns onto paths or embankments.

The manoeuvering possibilities of such an arrangement, which often was spread out at a depth of several kilometers, were therefore quite different from those which result from the formations spread out at depth and very open which are the general rule in Europe.

The battalion commanders should also forget about stopping fighting towards 5 P.M. for the purpose of having the time necessary for regrouping together all of their people and setting up look-outs for the nighttime. They should also forget about bivouacs grouped together over a few acres and centers of resistances lumped together over an area of about 10 acres.

Finally, they should reconsider antitank defense and set up antiaircraft protection, seeing to it in particular that dispersion is carried out into covered areas. All of these measures were within their capabilities but they ignored them in Indochina.

A new approach should be carried out on the higher levels, especially in the case of officers of the other branches who commanded battalions. The war

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of Indochina may have led to them to judge the infantry as a function of a performance which was made unrealistic because of abnormal conditions of its use.

Certain people were able, obviously, to write at the end of the conflict: "the infantry can no longer achieve the results obtained by artillery and aircraft fire".<sup>1</sup>

But can we neglect what an infantry Colonel has so perfectly expressed:<sup>2</sup>

"The infantry was used in Indochina under deplorable conditions which rapidly made the infantry ineffective in carrying out its missions. Used for all purposes, utilized without cease, without rest, without a period of re-adaptation and reinstruction, the infantry rapidly became worn out".

"Can we consider that an infantry soldier (Just as his comrades in the other branches, by the way) who has gone through two wartime assignments in Indochina in a combat unit can capitalize from as many months of warfare as occurred during the war of 1914-1918, and who was permanently in a situation of insecurity, who constantly faced the invisible danger of mines, the ambush, the attack on his post?"

"Without engaging in inappropriate sentimentality, we must remember that the infantry soldier practically had to march on his knees and no longer had the leisure time nor the disposition to think about and apply the innumerable remedies, which were often repeated and often not very authoritative, which came to him through each messenger".

"If we must admit that the officers and troops sometimes were not as efficient as we would have liked them to be, the fault does not lie with the performers but is the result of inconsiderate use of them, especially in the

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<sup>1</sup>Colonel X

<sup>2</sup>Colonel Y... Zone commander in Tonkin.

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infantry which did not permit the beneficial pauses necessary for physical reconditioning and instruction".

The infantry, thus, does not require rehabilitation but rather comprehension.

The upper-level officers of the infantry, at the same time that they are profiting from the lessons of the war, must see to it that the Infantry is better prepared for other conflicts and deployed to more effect in the event that it is necessary to fight again.

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## CHAPTER II

### AIRBORNE TROOPS

"The doctrine is good, the rules are valid. It is therefore in their disregard or in their non-utilization that we must seek out the reason for the failures".<sup>1</sup>

This, indeed, is the primary lesson which airborne units have drawn from the campaign because they had to establish their tactics and methods in accordance with the experience of others when they (the airborne units) were formed.

On the command level, in particular, the doctrine of utilization was clearly confirmed:

"Airborne troops should be held as a general reserve and should be engaged upon the order of the Commander of the Theater of Operations. Their utilization implies the use of the Airforce and the airborne operation, because of the requirements of its training, because of possible extensions, demands combined means which are usually not available except at the level of the Commander-in-Chief".

"The General Reserve Airborne Troops, therefore, should not be under the orders of local commanders except in the case of definite missions and for definite periods of time which have been ordered or accepted by the Commander-in-Chief".

"The entry into action of airborne units cannot be improvised. Their intervention in the battle and the desired time and place should be very carefully planned in advance in the operational plan of the Theater Command. If

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<sup>1</sup>Report by the Airborne Troops Command concerning the Indochina Campaign.

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this is necessary, the Commander of airborne units must very carefully guide this Command towards wise utilization".

"The command of the operation is entrusted, right from the initial phase, to a General or a high-ranking officer, assisted by a joint Chief of Staff which includes technicians and officers who are specialized in airborne operations".<sup>1</sup>

If the campaign of Indochina has permitted us to make a general examination of our knowledge, it has also given us the opportunity to restate two things:

- on the one hand, we have found the best organization of the various units after inevitable trial and effect,
- on the other hand, we have become aware of the true role of paratroop formations and we have realized that certain missions could be assumed by a simple "parachutable infantry", the usefulness of which constitutes one of the lessons of the battle of Dien-Bien-Phu.

## UNIT ORGANIZATION

AIRBORNE INFANTRY - The structure of airborne battalions was the subject of numerous modifications before the adoption of the quaternary order at all echelons was agreed upon, i.e.

- A Headquarters Company equipped with 4 light machine guns and four 81 mm. mortars.
- Four Paratroop Companies comprised of:
  - A Headquarters platoon with two 60 mm. mortars, one light machine gun, a 57 mm. recoilless cannon.

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<sup>1</sup>Report by the Airborne Troops Command concerning the Indochina Campaign.

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- Four combat platoons, consisting of a firing force (two automatic rifles, a grenade launcher) and a shock element.

With regard to the Indochina-type Infantry Battalion, the Airborne Battalion presented the following differences:

- it was better staffed: 22 officers, 110 NCOs.
- the total numerical strength was larger: 979.
- the ethnic balance was different: 50% Frenchmen or Legionnaires and 50% indigenous.
- the weapons were better adapted to shock combat: only half as many rifles but twice as many automatic pistols and a large number of carbines.
- the radio transmitting means were twice as numerous.

On the other hand, the firepower of the heavy weapons was the same.

On the ground, the activities of the paratroopers were obviously comparable to those of infantry soldiers. Thus, most of the remarks which were made concerning the infantry are applicable to the paratroopers.<sup>1</sup>

The formula which we ended up using was good but it is certain that in a European war the battalion would have antitank weapons.

AIRBORNE ARTILLERY<sup>2</sup> - Equipped in the beginning with flat-trajectory fire equipment, the Airborne Artillery adopted curved-trajectory fire equipment. In 1953, therefore, there was created a Heavy Mortar Airborne Company with eight 120 mm. guns. It was discontinued in May of 1954 after the battle of Dien-Bien-Phu. Shortly before the end of hostilities, another Heavy Mortar Company was

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<sup>1</sup> In Indochina, however, the high percentage of indigenous personnel gave the airborne battalions a much greater "coefficient of adaptation to the country" than in the case of the regular battalions.

<sup>2</sup> Report by the Airborne Troops Headquarters concerning operations in Indochina.

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set up.

Our experiences, although limited in duration and in quantity, makes it possible to conclude the fact that the Airborne Artillery must be many-purposed.

"In effect, Airborne Units are generally utilized in land operations, in disembarkment operations or in airborne operations. Consequently, in order to operate effectively, the Artillery Units must employ in each one of these cases material which has been adapted, carried or tractor-drawn: recoilless cannons, mortars, howitzers, multiple-barrel weapons. In addition, even during an airborne operation, the light parachuted material (for example the 75 S. R.) can advantageously be replaced by more powerful material (for example, the 105 mm.) which is airborne, carried by air or installed".<sup>1</sup>

THE SIGNAL CORPS OF THE AIRBORNE TROOPS - The Signal Corps was called upon to simultaneously carry out three distinctly different missions:

- establish fixed liaisons within the bases and between the bases of the various airborne units in Indochina,
- establish liaisons between airborne companies,
- satisfy the requirements of the three airborne groups.

As a result of their various missions and the fact that most of the battalions were stationed in Tonkin, the Signal Units were made up of:

- a fixed-operating platoon in the south,
- a light company in the north which was set up to serve two groups.

The company, therefore, had two parachutable platoons of reduced numerical strength (about thirty persons) and the requirement of having to do with so few personnel demanded the selection of personnel who were very resistant and

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<sup>1</sup>Report by the Airborne Troops Headquarters concerning operations.

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particularly competent in various specialties.

The radio equipment, therefore, had to be of two various types:

- medium-power equipment (S.C.R. 188 or 193) for fixed communications,
- equipment which was at the same time sturdy, parachutable, not very voluminous and able (for certain posts) to achieve sure communications at a great distance (100 kilometers and further) for combat liaisons.

These apparently contradictory qualities led to the exclusive utilization of the A.N.G.R.C. 9 and it proved to be completely satisfactory.

But its weak power (25 watts), when compared with the required capacities, made it necessary, in addition to a very strict selection of frequencies, for the radio leaders to study very scrupulously the direction of their one-wire antenna.

Despite the variety of the missions which could be assigned to an airborne group, experience has shown that its communications could be reduced to:

- two rear liaisons by telegraphy with an ANGRC-9 (Headquarters-Logistics),
- one advanced liaison by telegraphy with an ANGRC-9,
- one advanced liaisons by telephone with an ANPRC-10,
- one ground-to-air liaison with an ANTRC-7 (or an ANPRC-10).

Communications with aircraft were effective not only during parachute drops but also during ground combat (informational communications, requests for support).

One fact should be retained which characterizes the communications in general of the airborne units: the utilization, in operations, of the same equipment from the headquarters level right down to the company level: ANGRC-9, ANPRC-6, ANPRC-6, ANTRC-7.

The ease in utilizing this equipment led the officers to carry out their

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communications themselves. Leader-to-leader conversations at the company and battalion levels offer obvious advantages.

USEFULNESS OF PARATROOPERS - The reasons which prohibited the carrying out of actual airborne operations during the campaign have been given in Volume 2.

In addition, some airborne officers have believed that some of the missions accomplished by their units might not have been natural for them:

"In some cases, "the parachute-airplane" was used exclusively as a means of transport because it was the most rapid, the least tiring, the least dangerous, perhaps the only possible, means".

"This utilization has remained a valid one, even for operations on the circumference of the Tonkin Delta; it suffices to recall the condition of the roads, the mines, the ambushes, the slowness of the convoys".

"This type of operation was more suitable to a parachutable infantry".<sup>1</sup>

In studying operations which were similar to the operation which was the prelude to the battle of Dien-Bien-Phu<sup>2</sup> the Airborne Troops Commander stated his feelings as regards the true mission of his forces:

"The paratroop units, essentially mobile, constitute assault troops. Their function is to conquer a bridgehead and to hold it temporarily in order to establish an air and land base there. These units must then be relieved quickly by troops brought in by air who will occupy and defend the base".

"The paratroopers are then placed in reserve, reequipped and retrained so that they can be available for other missions. They should not be employed for reinforcements as "fortress paratroopers".

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<sup>1</sup> Report by the Airborne Troops Commander.

<sup>2</sup> Operation "CASTOR". The same reasoning could also be applied for the Operation "LOTUS" the purpose of which was to conquer a bridgehead at Hoa Binh.

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These suggestions pose, therefore, a dual problem to which interested parties have not proposed a precise solution:

- under what circumstances can airborne units be replaced by common parachutable troops?
- is it possible to recruit these troops?

PARACHUTE UNITS - Airborne troops are organized and instructed to carry out "assault landing", that is to say to slash out, like a punch machine, a bridge-head in an enemy area.

This requires that the units, after splitting up in order to take their places in the transport planes, be able to reestablish a combat formation on the ground in a few moments. Also, paratroop battalions and batteries are differentiated from the other bodies of their branch by:

- the ability to regroup themselves very quickly despite the dispersion which is subsequent to the jump,
- the possession of weapons and material which is designed not only to be dropped but also to be quickly unpacked, reassembled<sup>1</sup> and then transported by vehicle.
- training in unforeseen situation (incidents due to the jump, the necessity of facing an unexpected direction on the sudden appearance of danger, etc.).

But, once the bridge head has been conquered, once the jump zone has been marked with ground-lights and then placed under cover from enemy infantry fire, once the radio connections have been established, the reinforcement of the airborne troops can be provided by regular ground units.

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<sup>1</sup>When several loads are dropped.

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As a good rule, the ground units should be brought in ready to start working, as soon as transport planes can land: but it would be extremely useful for the first reinforcements to be able to jump by parachute as long as a landing strip has not been set up and as long as planes cannot be brought forward and landed without too much risk.

Is it therefore impossible to conceive of a sort of "parachutable infantry" which only would have to jump onto terrain marked with ground lights and protected and which would have the necessary spare time for regrouping and for unpacking its material dropped in containers?

This Infantry would be utilized not only when it is a question of maintaining and extending the conquest of the airborne troops but under numerous circumstances when the friendly forces are cooped up in a pocket and call for assistance.

The war of 1939-1945 offered different examples of such a situation and, without discussing battles which ended up in a blockade such as in the case of Stalingrad and those which almost ended up in an encirclement such as at Bastogne, without speaking of the emplacements which lasted for months such as in the case of some of our Atlantic seaboard coast or Tobrouk, it is worthwhile remembering that airborne troops were called upon twice to make a jump landing to strengthen forces which were about to become surrounded:

- during the Norwegian campaign for the entire time when the German detachment, of General Dietl, which had captured Narwick, was rammed in between the Swedish border and the cordon formed by the Allied troops<sup>1</sup>.

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<sup>1</sup>In the beginning of May 1940 the Germans were able to air drop battalions by landing on a frozen lake, but then it became necessary to let loose an infantry battalion of the 1st Airborne Regiment.

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- during the sea landing at Salerno when the allied landing forces were driven into a corner at the landing beaches<sup>1</sup>.

A future conflict would most probably see the return of such situations and the airborne infantry could be used to reinforce, for example, certain sectors of a manoeuvring support zone, as it could have done at Dien-Bien-Phu during the relative lull in the month of April 1954.

During the war of 1939-1945 liaison teams were dropped several times in regions where underground forces were operating. Similar parachute drops were used during the Indochina campaign<sup>2</sup>.

But it would have been just as necessary to reinforce certain groups of guerrillas by one or more infantry detachments.

Finally, when the enemy has suffered a setback and when the harassment of its communication networks could bring about its retreat, when the downfall is pressed and when it would be necessary to overrun the rear to create confusion and panic, briefly when situations similar to those of September 1944 in France and April 1945 in Germany come about, it would be useful to fight without numerous airborne infantry elements being counted upon to abruptly increase the fighting potential of the underground forces and the resistance movements.

Airborne units will never suffice to assure missions of this type. In 1953 the airborne units represented approximately 6% of the Expeditionary Forces and this proportion was greater than that which was found in the several armies during the war of 1939-1945 and this proportion would be encountered probably in a future conflict. Despite this, the volume of our airborne troops

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<sup>1</sup>Two battalions of the 504th regiment of paratroopers jumped on the night of September 13 and 14 and the 505th regiment jumped on the night of the 14th to 15th.

<sup>2</sup>See the chapter devoted to underground forces.

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was not sufficient because supply factors for the battle of Dien-Bien-Phu required us to provide for three battalions (which would be added to the two which were already situated in the entrenched camp).

It is therefore absolutely necessary to find elsewhere than in the airborne divisions the necessary troops for confronting all of the situations emanating from a European war.

Possibilities of recruiting paratroopers - Ever since the war of 1939-1945 it had been proved that a parachute jump did not require exceptional physical qualities nor did it require a long and complicated training period. The hundreds of volunteers who were dropped by the B.C.R.A. or the allied special services were not always athletes and many made their first jump onto territory occupied by the enemy.

But the battle of Dien-Bien-Phu confirmed this first lesson much more clearly: from March 14th to May 16th 1954, in effect, 3,597 holders of a paratrooper certificate were dropped to reinforce the garrison, but there were 709 volunteers who jumped for the first time on the confused terrain of the basin after only a few hours of instruction. Now, the percentage of mishaps does not appear to have been much greater among the beginners than among the veterans<sup>1</sup>.

It is therefore feasible that in the future we could bring together infantry men and, after a medical inspection, give them a rapid training period and then make them complete a night jump without having to fear innumerable fractures or sprains.

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<sup>1</sup>Paratroop instructors explain this fact by experience: Accidents rarely occur during the first jump because the jumper is sufficiently preoccupied by the advice which he has received and he reaches the ground without becoming stiff, in the position which he has been taught.

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There is not even any need to use fighters who have not been prepared, because we now have a sufficient number of ex-paratrooper reserve personnel to be able to find thousands of men who are capable, if the need arises, to "go through the door" without having to receive any repeat jump instruction. The main thing is to be able to group them together at the proper time.

The Indochina campaign also proved that the conditions required for the jump could be made more flexible without occasioning serious mistakes.

Thus, the presence of open terrain without any obstacles and a very good landing surface is not absolutely necessary. Far from it!

"The ground may be a slope (up to 30%), covered with hillocks. If there are any holes they should be large enough so that the man can drop to the bottom (small holes are much more dangerous than large holes)".<sup>1</sup>

Many operational jumps were made on worse terrain. Naturally there were accidents but their rate was not very much greater than the accident rate during training exercises. At any event, the number of men hurt remained within the limits of the risks which must be encountered for any war operation.

On the other hand, the wind is an insurmountable difficulty when it reaches, and even more so when it exceeds, a speed of 10 meters per second. Landing is then occasioned with such force that losses are very great. Thus, at the beginning of operation "CAMARGUE", a battalion, which despite being dropped on dunes encountered a wind which blew in strong gusts, left 3 men killed and 43 hurt on a jump zone<sup>2</sup>.

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<sup>1</sup>Report from the Airborne Troops Commander.

<sup>2</sup>An initial battalion was dropped on a nearby jump zone in the morning. The wind was weak and there were no losses. A second flight of transport planes was supposed to carry the second battalion at about 2 P.M. but the jump was in fact made around 4:15 and during that time gap the wind had reached extreme violence.

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There still remains the possible intervention of the enemy D.C.A. (anti-aircraft defense) under whose fire our units had to come on various occasions during the campaign.

In 1946-1957 the anti-aircraft defense only took the form of rifle fire and sometimes machine gun fire<sup>1</sup> against our planes and against our men during their drop. But, the enemy subsequently used anti-aircraft machine guns and during the battle of Dien-Bien-Phu there were barrages of 37 mm. and 12 mm. 7, not to mention the more or less accurate bursts of innumerable automatic weapons.

The losses, however, resulting from musket fire and by light machine guns never were very great. In any event, they never hampered the units in carrying out their mission<sup>2</sup>.

At Dien-Bien-Phu the drops were carried out at night and according to instructions given from the ground. Accurate figures are lacking as to the percentage of wounded or killed prior to landing or immediately after landing, but some indications leave us to believe that they were not very great<sup>3</sup>.

These fragmentary experiences, therefore, seem to show very well that a night jump made in a zone where the anti-aircraft defense was not very thick would not in all probability result in appreciable losses.

Without departing from prudent estimations, we can therefore affirm that

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<sup>1</sup>One of our planes was shot down in this way during "operation Lea".

<sup>2</sup>The experience of the 1939-1945 operations corroborates the fact that the anti-aircraft defense is dangerous only when the units must jump directly onto a position which is strongly occupied by the enemy (as in the case of the Crete operation, for example).

<sup>3</sup>On the other hand, the gradual shrinking of the jump zone resulted, unfortunately, in infantry dropping on terrain occupied by the enemy.

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the Indochina campaign makes it possible to conceive of the possibility of using troops made up of volunteers (calling up reserve paratroopers in paratroopers in particular) for all missions which do not entail assault landings.

By dropping the troops at night on well-marked jump zones and in a light wind and by assuring them of the assistance of "reception committees", the troops can reach the ground and regroup without running any insurmountable risks.

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## CHAPTER III

### THE MECHANIZED CAVALRY BRANCH

To draw any lessons from the utilization of the mechanized branch in Indochina which are applicable to a European war seems to have more to do with imagination than with deduction.

Nevertheless, we may draw from these nine years of combat a certain number of indications relative to the tactics of small units and, above all, as regards material. In addition, it is appropriate to mention the experience which the cadres of this branch were able to obtain in Indochina.

TACTICS OF SMALL UNITS - Indochina has, above all, given us the opportunity to establish the optimum make-up of small units, even though it makes us consider once more the difficulties of excessive splitting up of armored units.

The splitting up of units, sometimes carried out to an extreme, could, however, be understood as the spreading out of the dangers and consequently of the needs<sup>1</sup>. It was particularly important to provide support to the infantry battalions which had been overworked.

But dispersion frequently eliminated the possibility of retaining armored reserves. Also the difficulties in depriving ourselves of a manoeuvering instrument must be considered and we could not establish a tactical limitation concerning the splitting up of armored units, a temptation of a permanent nature to a command which is poor in resources.

Nevertheless, there is most assuredly an organizational limit and it has once more been proved that:

- the squad is the smallest unit which can be detached temporarily in a

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<sup>1</sup>See Volume II

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joint system, but that the squadron was the sole unit which could provide on a daily basis for the maintenance and supply needs of material.

- the Regiment is the only unit which can live separately because not only does it assure the upkeep of its subordinate units but it assures the maintenance of their material (repairs in particular).

Any other splitting up, therefore, implies a modification in even the structure of bodies of troops or the conferment of non-organizational means.

The Quaternary Order<sup>1</sup>, usually adopted in the armored units of the Expeditionary Corps, has made it possible to attribute more flexibility to manoeuvring, without considerably increasing the difficulties encountered by Headquarters.

But two particular factors in the theater of operations facilitated the task of the leaders of quaternary formations:

- the Platoon, as a result of its firepower against an enemy deprived of heavy armaments and also because of the type of terrain upon which it operated was only rarely called upon to manoeuvre. Thus, 4 tanks were sufficient for it and the quaternary squadron with 17 or 18 tanks did not represent any excessive encumbrance as compared to the ternary squadron.

- the absence of relief in certain regions also assisted the headquarters because visible liaison was generally possible.

No definite conclusion can therefore be drawn as regards the value of the quaternary order and its adoption could, under other circumstances, render the task of the various leaders more difficult.

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<sup>1</sup>See Volume II.

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The quantitative proportion of the Infantry (one battalion to a squadron), which was allowed in joint armored subgroups<sup>1</sup>, fulfilled the dual necessity of protecting the tanks from close attacks and prolonging their action in covered areas which they could not penetrate, especially in the villages of the deltas.

This proportion resulted in particularly unfavorable conditions for the activities of the Cavalry<sup>2</sup> and it seems that this proportion could not be exceeded without resulting in a prohibitive burden on the formations<sup>3</sup>.

On the other hand, the armored reinforcement granted to a Mobile Group or to a Group of Naval Constructors (G.M.)<sup>4</sup> for a given operation never exceeded a squadron of tanks even though combat conditions would have required more. The proportion was too small in this case but our lack of resources did not allow us to do any better.

At any rate, the infantry required by our armored tactical formations should be an integral part (organic part) of them.

"Any unit of the Branch which has a sufficient number of fighters carried by vehicles on the same footing as the armored vehicles is appropriate for manoeuvering and for cavalry combat. On the contrary, a unit which does not have such troops available must request the assistance of the Infantry in order to fight, thus losing a great amount of its manoeuvering capability. It must

<sup>1</sup>The proportion allowed in Europe is one company per squadron.

<sup>2</sup>We are only thinking here of appropriate cavalry actions and not of the accompaniment of the Infantry which necessarily requires a progression according to the rate of infantry manoeuver.

<sup>3</sup>This load was particularly heavy when the infantry had to operate outside of road networks. The adoption of a jeep-type vehicle would have been very useful here (discussed later).

<sup>4</sup>In Europe this proportion was one squadron per battalion.

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conduct its fighting according to the speed of the Infantry and, consequently, it does not possess the inherent feature of its particular branch (speed). Only speed allows for surprise, increases the shock effect and assures substantial results with few resources (in particular with reference to pursuit)<sup>1</sup>.

Experience with the Crab Squadrons (Escadrons de Crabes) has also confirmed that: "the manoeuvering possibilities are directly related to the number of vehicles available to the Leader. The effectiveness of a Squadron, strengthened by its 33 Crabes, depends greatly on the size of this number. The Cavalry, the Branch for manoeuvering purposes, more often is at a greater advantage having many light vehicles rather than few heavy vehicles<sup>2</sup>.

On the other hand, even if the activities carried out at night by the armored units were not very numerous, they nevertheless did prove that they should not be automatically condemned<sup>3</sup>, inasmuch as certain decisive results could be attributed to the armored units.

Finally, the strategic mobility which was lacking in the armored units could have been obtained by widespread use of air transport.

There is no doubt that the presence of armored units which can be transported by air might become a necessity in a European theater of operations. But more often the purpose sought will no longer be that of reaching inaccessible regions, but rather that of saving time. Also, the delays, often quite long, which result from the operations of disassembling, embarking and re-

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<sup>1</sup>Lt. Colonel X... Corps leader.

<sup>2</sup>Lt. Colonel X... Corps leader.

<sup>3</sup>See Volume II.

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assembling the material must be reduced by adapting the material<sup>1</sup>.

VALUE OF THE EQUIPMENT - The armored Branch in Indochina did not have any vehicle adapted to the particular conditions of the war. But it was able to draw some lessons relative to the various equipment which it used and to indicate which equipment it would have liked to have at its disposal.

Certain equipment whose presence would be outdated within the framework of the battle Corps could still be useful in defending the territory. Our continuous surface control operations proved this.

Thus, a great service was rendered by scoutcars, halftracks, M8 scoutcars in Indochina for opening routes, protecting itineraries, and for escort.

The simplicity of the scoutcar, in particular, makes it possible to consider similar vehicles at low cost starting from vehicles being currently manufactured in civilian industry (trucks, tractors).

Its silent operation, its speed and its simple maintenance make it very convenient to use. It has adequate combat value because of its armor which protects the personnel from infantry shells, its firepower (2 or 3 machine guns or an automatic rifle) and the design of its body which makes it particularly well suited to live in.

The protection could however, be improved by a top (not armored) which would provide protection against grenades and also by providing shields for

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<sup>1</sup>It is necessary, in terms of present-day planes, to include in any study of a new material an examination of the conditions of its air transport; in providing eventually for the necessary dismanteling (number of loads) and in establishing the formations of the Branches or of the material service capable of carrying out these dismantelings (2nd, 3rd or 4th echelons).

The air transport of equipment already in service should also be studied in the same manner.

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the weapons on board.

It would also be desirable, while maintaining the advantages provided by the tires, to increase its capability to leave the road.

Indeed, equipment such as the E.B.R. would be better adapted to surface defense missions but its high cost would most certainly not make it possible to make general use of it at the rears.

We should also note the services rendered by the M8 automatic howitzer. Its excellent armament, which could be rapidly put to use, made up for the disadvantages of its outdated chassis.

The tanks which were being used in Indochina by the end of hostilities were very satisfactory considering, of course, the enemy's lack of powerful anti-tank weapons.

Our experience is therefore only applicable to the manoeuvrability of the equipment, to its mechanical behavior, to its resistance to mines and to the effectiveness of the equipment against enemy field personnel and set-ups.

The M24 tank and the T.D. M36 tank (converted into a medium tank) had unit pressures which were just about the same and which gave them a mobility which was generally considered to be satisfactory. Any improvements in this case, however, would provide the equipment with improved tactical possibilities which would most certainly be appreciated by the users.

Their protection proved to be sufficient and pierced armor was an exceptional occurrence.

The response of this equipment to mines can be considered as being satisfactory. Losses in personnel sustained by the tank crews were low and generally were not very serious despite the size of the explosives used by the enemy. This feature can be explained by three facts:

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- the location of the track as regards the body (along the armor and not under it),
- sufficient armor on the floor-board, which was sometimes put out of shape but was not pierced,
- holds to the ground effectively.

Wear and tear, however, was often considerable: several double rollers, the suspension bracket and the shock absorbers were frequently out of order, the pressure pulley or the chain pulley, sometimes even the frame, were dilapidated. Besides, the evacuation of the equipment under fire was very long and toilsome.

It would therefore be advantageous to reconsider an idea which is already old and to provide the armored vehicles with less-resistant pieces which would yield under the effect of the mines. An arrangement of this type would make it possible to limit damage and to facilitate repairs.

The M24 tanks underwent thick and numerous artillery fire at Dien-Bien-Phu. Their behavior was satisfying because only two of them (out of ten) were seriously damaged by 105 mm. fire which hit the target.

The metal caterpillar tracks proved their superiority. "They alone resisted the shell bursts and the 57 mm. S. R.'s direct fire. A trial at using rubber caterpillar tracks" had to be abandoned because of the wear and tear sustained at each sally"<sup>1</sup>.

But the armament of the tank units had a serious defect because of the almost complete absence of curved-trajectory fire tubes, because the few available M8 howitzers were distributed to reconnaissance units owing to their strong unit pressure.

<sup>1</sup>Report on the M24 tanks in the battle of Dien-Bien-Phu.

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To fight an enemy who was primarily a foot soldier, the crews only had flat-trajectory fire cannons and nondelay fuse shells. Thus, they found it impossible to continue their action in covered terrain which could not be penetrated by armored equipment.

Probably the same observations would have been made in the covered and hilly regions of Western Germany because the conditions of utilization would have been similar.

It would also be desirable to adopt equipment based on the light tank and which would be armed with a 105 mm. howitzer<sup>1</sup>.

The battle of Dien-Bien-Phu, when the M24 tanks of the Hervouet Squadron encountered tough fighting, has made it possible to formulate some observations relative to the armament of this type of equipment.

The 75 cannons, brought in for the purpose of firing a large number of shells within a short period of time, saw their recoil buffers slip loose rather quickly. The quality of the material, however, could not be blamed, for it was put to a task for which it had not been intended<sup>2</sup>.

Close defense is without a doubt the area in which the most trustworthy lessons were obtained from the campaign of Indochina, as a result of the frequency of the ambushes and engagements at short distance.

It appeared that the best trump-card of the defense was the instantaneous nature of the retort. All smaller weapons can take part in it (canister shell, machine guns, grenades, pistols, individual gunners). But special tank equipment should be designed for very close combat.

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<sup>1</sup>This material is supposed to exist in the U.S. Army and is supposedly derived from the M24.

<sup>2</sup>Report on the M24 tanks in the battle of Dien-Bien-Phu.

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This equipment could include a certain number of barrels set up around the vehicle, conveniently arranged, and the operation of which would be carried out by the tank leader from inside of the turret. These barrels would project shells at a short distance which would explode, in the manner of bouncing mines.

The vehicles used by amphibious groups proved their usefulness in all of the debarkation actions. They also rendered important service in regions cut off by water and in marshy or flooded zones. This means that they would be useful in a European theater of operations where such conditions of utilization would no doubt be found again.

Although some people predict the implementation of a unique amphibious vehicle bringing together the potential of the crabs and the alligators, it seems that the distribution of amphibious missions between two mechanical means of complementary possibilities should be retained.

One of these means would be light, rapid, would have a low unit pressure, would not have any armor or would be only slightly armored and would carry automatic weapons. It would be the reconnaissance and surprise instrument. The other, better protected, better armed, having a good transport capacity, would be heavier. It would represent the element of force.

As a whole, the crabs and the alligators satisfied their users despite their lack of simplicity and their lack of adaptation to muddy terrains. But improvements could be made to correct the following defects.

The hull of the crab was too fragile and its hold-up height against vertical obstacles was not sufficient. Its buoyancy was inadequate because of the weakness of its guard above the line of buoyancy. Finally, its rolling carriage was defective, wore out quickly and required long and tedious upkeep.

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On the other hand, the fact that it was easily transportable on current-type trucks was a very much appreciated quality.

The Alligator was handicapped on the ground by its too high unit pressure, by its rolling carriage which was poorly adapted to hard terrains, by a ground board which was inadequate and by delicate mechanical parts (weak motor, half-trees and driving gears which were fragile). On the water it was difficult to control.

The lack of certain vehicles was deeply felt, in particular the lack of a vehicle designed to transport accompanying infantry soldiers<sup>1</sup>.

The solutions adopted during the campaign were only palliatives; the half-tracks and the G.M.C.'s were tied up on the roads and embankments and the loading of the infantry men on the quarter-decks of the tanks presented all of the difficulties which we are aware of.

It is urgently necessary to design a vehicle capable of carrying the squadrons (or companies) which are carried by the armored units.

This vehicle, with a capacity of from 12 to 15 men<sup>2</sup>, should have the following features:

- equal or better capability on varied terrain than that of the tanks already being used,
- a silhouette which is as low as possible (height less than 1.80 m.),

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<sup>1</sup>Certain officers also indicated the lack repair means having the same track as the combat vehicles and deriving from them (they also regretted not having any tank dozers available).

<sup>2</sup>A vehicle for 12 men is being tried out, but a capacity of 15 men seems preferable, since the campaign has once more stressed the concern that the size of columns be reduced. Besides, this solution (about 10 vehicles per squadron) would provide sufficient personnel at the squad level (2 vehicles in the quaternary system, 3 in the ternary system).

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- total armor protecting occupants from infantry projectiles, shell bursts, and, to a certain extent, from mines.

It would also be desirable to be able to load it onto Nord 2501 planes by breaking it down into a small number of separate loads. The disassembly and reassembly should be simple and should be able to be carried out by a 3rd echelon crew.

A light caterpillar would be an indispensable addition to it. Its qualities should be, in order of importance:

- easy to carry by air, without prior dismanteling,
- very low unit pressure (less than 500 grams per square centimeter and, if possible, around 300 grams per square centimeter),
- armor to protect against infantry light arm projectiles and shell bursts,
- carrying capacity of 6 men or a load amounting to from 750 kilograms to 1 ton.

This all-purpose vehicle would be particularly useful for carrying portable supports, provisions, and in evacuating material from the battle field.

The extensive use the enemy made of mines has caused us to make certain changes in our vehicles.

The general use of antimine carpets placed under the floor-boards of the vehicles, as well as the utilization of rubber springs filled with sand, has proven satisfactory. It has also been noted that the knapsacks of the men provided effective protection when placed on the floor-board of the G.M.C.'s. It is therefore probable that the same advantage could be provided by boxes under the floor-board of transport vehicles for containing soldier packs.

It seems to be desirable for studies to be made concerning devices pro-

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viding night vision and night firing so that the armored units can be used at night<sup>1</sup>.

Some arrangements which were made in Indochina have proved of interest. Thus, the general use of movable searchlights has facilitated the view for vehicle leaders.

Also good results have been obtained by aiming the tank cannon by means of a light beam from a searchlight mounted parallel to the barrel.

EXPERIENCE ACQUIRED BY CADRES - The Armored Branch, after 9 years of combat in which most of its personnel were engaged, has the right to question itself as to the educational value of the experience obtained by its NCOs and in particular by its officers.

Opinions in this regard are quite diverse. Some see definite value in this, others come to the conclusion that the cadres lose their form and they are ready to tell the cadres when they return to France to "forget everything you have learned up to now".

This, for instance, is the opinion of a high-grade officer:

"There is reason to be extremely wary as regards the 'experience' of the Indochinese war where our units often did precisely what they should not have done and where our young leaders forgot what was taught to them in the schools".

On the other hand, Colonel X, regimental commander, has the following opinion:

"This learning nevertheless had its value because it was done on the battlefield itself".

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<sup>1</sup>The equipping of armored vehicles with infrared devices for driving and firing has not been able to prove its effectiveness, but does seem interesting. (See rough draft of temporary directive for using small armored reconnaissance units equipped with infrared devices.)

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It is evident that the Motorized Cavalry Branch was exposed more greatly than the Infantry to the bad influences resulting from the existence of danger from the air, from the rareness of enemy artillery attacks, and above all from the absence of enemy armored equipment.

The tactics of the Motorized Cavalry Branch were also constantly influenced by the limitations imposed by circulating in rice fields or brush country and its units forgot outflanking and heading-off movements which were frequently not possible owing to the difficulty of the terrain.

But "it would nevertheless be unjust to neglect the experience obtained from certain aspects of this war which could very well reoccur in another theater of operations, especially as regards:

"security during marches and while at standstill,

"the insecurity of communications and the problems concerning supply,

;"the value of intelligence,

"the secretness of the operations,

"the great necessity of having personnel who are well trained physically,

"the value of various materials".<sup>1</sup>

It should be added that all of the crews accumulated hours of flying or of living under armor, that they received firing training, that they had to move around in difficult terrain, that they kept look-out during daytime and were on the watch many nights. In short, their senses received the education of the battlefield.

But the cadres learned more essential things.

Constantly intermingled with the Infantry, sharing its miseries and calculating its needs, they became aware of the necessary slowness of the manoeu-

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<sup>1</sup>Lt. Colonel X.

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vering of foot soldiers but also of the efficiency of the foot soldier. This renewed view of the methodical progression of the rifleman and of the legionnaire made it easier for them to understand how and why the task of armored units and the needs of foot soldiers could be complementary.

Finally, inasmuch as all tactical combinations rotate around the Infantry, the officers and NCOs of the Motorized Cavalry Branch obtained a better picture of the framework into which were included the activities proper to their Branch: reconnaissance, cover, delaying manoeuvres<sup>1</sup>.

Of course, these acquisitions should be carefully evaluated, but the experience obtained between their 20th and 30th year by the young officers of the Motorized Cavalry Branch has had a useful effect on them.

If we therefore can allow that a certain reconditioning of the personnel is required, this reconditioning should be limited to reeducating certain reflexes. This is the opinion of the Inspector of the Mechanized Cavalry Branch in Indochina who wrote:

"In 1955 the cadres will be readapted to European warfare, in particular as regards cooperation among branches of the armed forces, air danger and danger from armored equipment".<sup>2</sup>

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<sup>1</sup>All of the cadre who were called upon to substitute in the Infantry necessarily obtained a still richer experience.

<sup>2</sup>Report on the Activity of the Motorized Cavalry Branch during 1954.

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## CHAPTER IV

### THE ARTILLERY

The peculiar conditions under which the Artillery was used in Indochina and in particular the dispersion of the units meant that no lesson of a general nature could be drawn as regards the organizational set-up of the Branch and its utilization except perhaps a confirmation of currently-admitted principles.

Nevertheless, numerous details were gathered in various fields and these observations appear to be of a value which is sufficiently lasting to influence the development of Artillery.

THE UNITS - The tables of numerical force applied in Indochina were calculated at a minimum and proved to be definitely inadequate to be applicable under other circumstances.<sup>1</sup>

The fact that 12 guns were available instead of 18 was not regretted, however, because in the majority of cases the terrain made it difficult to deploy twelve guns.

On the other hand, the inadequacies were particularly felt by the look-out teams<sup>2</sup> and the crew personnel. Thus, the numerical forces, which were relatively acceptable owing to local combat conditions, would have been inapplicable in Europe.

In certain Groups, attempts were made to centralize all administration to the headquarters battery and services in order to save cadre. This experience was generally satisfactory and the following conclusions seem valid:

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<sup>1</sup>474 officers, NCOs and cannoneers.

<sup>2</sup>The same officer was called upon to carry out the duties of pathfinder, liaison officer and observer.

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"We should be able to achieve complete administrative centralization right from the Group to the rear echelon (pay, management of personnel and material of all types).

"In this way the firing battery commanders would be freed of administrative worries and only one NCO per battery would be needed to manage the company mess and the equipment (armaments, clothing, bedding, optical needs).<sup>1</sup>

EQUIPMENT - "American 105 H. M. 2 and 155 H. M. 1 howitzers have proven entirely satisfactory because of their sturdiness during movements and the ease of repairs on damage resulting from enemy fire".

"On the other hand, large changes in direction were slowed down owing to the need to uncover the equipment, particularly in the case of the 155".<sup>2</sup>

The War of Indochina, therefore, has corroborated the experiences of the 1944-1945 campaign as regards these two howitzers.

A certain number of officers have often noted the difficulties encountered in moving the 105 H. M. 2 in all terrains and they have foreseen the adaptation of a "small cannon which is self-moving, light and very mobile"<sup>3</sup>, this independently of the "infantry escort cannon" which is still nonexistent and which could probably be of the same type.

Limiting themselves to simple improvements, many officers would like to see an increased range because the 11,000 meter range of the 105 H. M. 2 has proven insufficient for allowing effective fire manoeuvre when the units are very spread out.

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<sup>1</sup> Commander X, Commanding the Group of a corps of naval constructors (G.M.). It might be noted, however, that one officer might not suffice for the company mess, equipment and clothing.

<sup>2</sup> Conel X. Commanding the Artillery at Tonkin.

<sup>3</sup> Leader of Squadron X, Commanding a group of corps of naval constructors.

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They would like to see an aiming device with unique deflection, continuous graduation from 0 to 6400, completed, adapted to tropical conditions and without any need for correcting parallax (the target on the pivot axis).

They desire the adoption of a mechanical fuse and well worked-out adjusters making it possible to carry out easily and quickly fusing fire to make up for the lack of POZIT fuses which are still too hard to find.

In addition, they noted many times that theoretical preparation gave excellent results as long as there is good topography and a recent radio-sonde has been used. However, it is still necessary to know exactly the Dvo's of the pieces and it would be useful to be able to compute it by means of a field device.<sup>1</sup>

The preparation work at the battalion level would be greatly simplified and the delays in opening fire would be reduced if it could then be possible to make the proper Dvo correction on each piece by means of a simple mechanism (for example offset lifting roller).<sup>2</sup>

Most cadres would above all like to see put into service an all-azimuth piece similar to the 105 mm. A.B.S. (but more mobile if possible) because during the entire campaign the batteries had to operate practically every day in all directions.

To bring this about, it was necessary to make use of existing equipment and "the artilleryman at all echelons had to adapt methods to the new condi-

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<sup>1</sup>This device would eliminate adjusting fire and calibrating fire which are always time-consuming, expensive and rarely feasible.

<sup>2</sup>Only planimetric adjustments would have to be done to the battery. In many cases these adjustments can be left out (zone fire, unexpected fire).

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tions which were imposed on him".<sup>1</sup>

Some of these methods should be kept:

- use of gun racers with vertical firing pit<sup>2</sup> (central pit for field artillery, round pit for fixed artillery).

- design of a ring with unique allowance for wind and continuous scale of 0 - 6400<sup>3</sup>.

- adoption of a graphical firing preparation procedure "which would consist in considering separately on the one hand the corrections which do not depend on the distance and on the other hand the wind corrections, a function which is that of both distance and direction"<sup>4</sup>.

American motor equipment once more proved its sturdiness<sup>5</sup> but: "the Diamond turned out to be too light for drawing the 155 mm. cannon".<sup>6</sup>

The P.C.T. trucks were the result of private initiatives and it would be necessary for each group to possess "a P.C.T. truck which is well designed, sturdy, with two sets of fire preparation devices: one would remain in the truck

<sup>1</sup>Lt. X, commander of the Artillery of the National Vietnam Ground Forces.

<sup>2</sup>Vertical fire was, however, rarely used in Indochina (except medium range).

<sup>3</sup>The adjusting device with unique allowance for wind is graduated in two half-circumferences of 0 to 3200.

<sup>4</sup>This method using a simple abacus designed by the headquarters of the Artillery of the National Vietnam Ground Forces was used by all of the Groups at Tonkin.

<sup>5</sup>The users, however, regretted that the connections at the end of the shaft (at the place of the handle) on some of our 1939 vehicles had been completely eliminated from the most recent models. This arrangement had made it possible to connect air pumps, cleaning hoses, etc.

<sup>6</sup>Colonel X, commanding the Artillery at Tonkin.

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and the other would be used in a shelter when a position has been occupied for several days".<sup>1</sup>

In addition, a trailer laid out in P.C. would be useful to the Assistant Captain.

The signal equipment turned out to be good<sup>2</sup> but it was once more shown that the S.C.R. 609 is not suitable to the D.L.O. It is absolutely necessary that the D.L.O. be provided with a light apparatus whose antenna can be seen as little as possible.

On the other hand, the A.N.G.R.C. 5, which in 1954 replaced the S.C.R. 608, was completely satisfactory.

FIRE MANOEUVÈR - The type of operations and the fact that the targets were almost always fleeting and spread out meant that opportunities for concentrating the fire of a large number of groups were rare.

This consideration explains in part why each Mobile Group made frequent use (and did not adapt) a group of 105 mm. whereas this solution was considered to be an exceptional one by artillery regulations. Difficulties arose from this because of fire manoeuvre and because of the operation of the group when some G.M. commanders had personal ideas as to the utilization of the Artillery.

But in the last years of the war the operations which brought together several Mobile Groups ended up in setting up artillery commands straddling the G.M. Groups and sometimes having a group of 155 mm.<sup>3</sup>. They were generally referred

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<sup>1</sup> Leader of Squadron X, commanding a group of G.M.

<sup>2</sup> See the chapter devoted to the Singnal Corps.

<sup>3</sup> Outside of operations, the two groups of 155 H.M. 1 which were available and which were not complete until 1954 were used as 105 mm. groups. The only 155/ GUN battery effected long-range fire on the outskirts of the Tcnkin delta.

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to as "Divisional Artilleries". When the matter became particularly important an Artillery Operations Command was created, but it was not provided with A.L. C.A. units, a look-out element or an intelligence center.

Despite this handicap, organizations of this type carried out useful trajectory manoeuvres and proved, if it is still necessary, that the Artillery is infinitely more effective when it operates on a mass scale and counterbalances fire.

"The Indochinese war has once more proven the importance of artillery action. It has confirmed the fact that this action must be massive, timely and applied to definite targets".<sup>1</sup>

At the end of hostilities it became obvious that it was necessary to restore Artillery General Staffs and give them the same means to seek out objectives as in Europe, because counter-battery fire was becoming an everyday mission instead of being an exception and for years there has been the tendency to forget this principle: "The seeking out of objectives within the range limitations of the pieces available to it is an absolutely necessary task for the artillery".<sup>2</sup>

**FIRE FOR EFFECT** - It was possible to check into the soundness of ammunition consumption and rates of fire prescribed by the regulations of the Branch for obtaining such and such an effect.

Unfortunately, the difficulties in supplying ammunition frequently led certain officers to "play tricks with the schedules". They were nevertheless astonished to see that a burst of 24 1055 mm. blasts did not neutralize the Viet-Minh foot soldiers crouched on the road embankments at the outskirts of a vil-

<sup>1</sup>Colonel X, commanding the Artillery at Tonkin.

<sup>2</sup>Study on artillery use in Indochina by the artillery inspection of the Far East Ground Forces, March 1954.

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lage or else that a final protective fire of two or three salvos only brought about a short delay in the enemy attack.

It is therefore necessary to restore to the cadre the respect for figures which were determined by the experience of two wars.

While keeping this necessity in mind, we have nevertheless been able to realize that the fire schedules on personnel not protected or only slightly protected could undergo a few changes.

"Experience has shown that after a salvo of three blasts per piece by a group of 105 mm. converging on the center of a small-sized target neutralization was generally obtained for a few minutes time".<sup>1</sup>

It was also realized in the case of final protective fire that "firing three or four shots per gun and along a front of 50 meters halted the enemy attack for a significant amount of time".<sup>1</sup>

<sup>1</sup> "The consumption in practice is therefore considerably less than the consumption in theory. But the remanence<sup>2</sup> should also be considered as being less".<sup>1</sup>

A system of this type, therefore, could not be effected unless firing was renewed at the end of a few minutes if the neutralization were to be prolonged. In many cases this important factor was overlooked.

In addition, neutralization was often jeopardized because certain artillery-men spent a relatively long amount of time on adjusting prior to opening up the bursts for effect. In the case of an enemy as elusive and as quick to disappear

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<sup>1</sup> Colonel X, commanding the Artillery of North Vietnam.

<sup>2</sup> This notion of remanence is very subjective and depends to a large extent on the degree of hardening to war conditions by the enemy.

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as the Viet-Minh infantry man, the advantages of a careful adjustment of fire were often nullified because the target had the time to escape before he could be fired upon. It would have been preferable to fire right away even at the price of having to shift fire after observing the effects of the first salvo.

But this requires the artilleryman to always be limber<sup>1</sup> and the supported troops to be able to point out with precision the targets which reveal themselves.<sup>2</sup>

INTER-BRANCH LIAISON - The following three statements summarize rather roughly but correctly certain difficulties as regards liaison among the artillerymen and their employers:

"The cooperation between the artillery and the combat branches has not given the results which would normally be expected of it. The reason for this is the lack of training of artillery liaison officers and their lack of influence vis-a-vis the interbranch leaders whose views were too often narrow and who were tyrannical in their demands".<sup>3</sup>

"A lot of work must be done during peacetime to teach leaders of supported troops the potential of the artillery and also its limitations (they generally are not aware of all this). Perhaps in this way we can avoid abusive demands and moody or impatient movements".<sup>4</sup>

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<sup>1</sup> By "limber" fire making it possible to determine experimental adjustments to be made in the theoretical elements or simply in the topographical elements.

<sup>2</sup> When the request is transmitted by a D.L.O., the D.L.O. is responsible for the designation.

<sup>3</sup> Colonel X, commanding the Artillery of Tonkin.

<sup>4</sup> Colonel Y, commanding the Artillery of Tonkin.

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"Some G.M. commanders, despite the protests of the artillery commander, had a marked tendency to dissociate their group<sup>1</sup> and to use the batteries as immediate support units of the infantry".<sup>2</sup>

At the small-unit level, however, the liaison between the infantry and the artillery had become so close that officers of the D.L.O.'s were sometimes jokingly reproached about having become "more like infantrymen than artillerymen", because they lived permanently in a battalion and became so attached to the unit that cases have been cited of officers of the D.L.O. who in the heat of crisis took command of a group whose leader was put out of combat.

But, on the other hand, these "infantry soldiers of the artillery" lost contact with their own group and the young officers were no longer always aware of the principles employed in their own branch.

Therefore, sometimes the following criticism was justified: "One must sometimes know how to say a firm no, endure unpleasant remarks, and flee the easy popularity of the person who creates paying objectives".<sup>3</sup>

The solution lies in periodically relieving the D.L.O. officers and it is to be regretted that lack of numerical strength did not allow this to be done more often in Indochina.<sup>4</sup>

<sup>1</sup> There were nevertheless cases when this practice was justified. When an isolated G.M. set up a defense position, the center of resistance where the group was deployed could not be covered by final protective fire because it could not withdraw. Thus it was necessary for at least one of the batteries to be placed at another center of resistance to protect the first center of resistance.

<sup>2</sup> Colonel X, commanding the Artillery of the Operation Group of the Plateaus.

<sup>3</sup> Colonel Y, commanding the Artillery of Tonkin.

<sup>4</sup> It should also be noted that the D.L.O. operating on behalf of the armored units should be equipped with a tank of the same type as those of the supported troops. The liaison between artillery and armored units was defective in the beginning because of this reason. Subsequently (after 1953) the liaison operated effectively.

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Some G.M. commanders felt that they did not have the freedom of action which they wished when they participated in an operation where the manoeuvering of artillery fire was centralized at a higher echelon.

"There are too many parallel hierarchies which, probably with good intentions, hamper the actions of the commander of the G.M."

"The organizational set-up of the artillery command often results in fire control falling out of the hands of the responsible leader. At the G.M. level, in any event, air interventions as well as those of artillery should be activated directly by the commander of the G.M. and not through an artilleryman "directing fire".<sup>1</sup>

Fire manoeuvering should, however, remain a credo of the artillery.

This manoeuvering is not possible unless the Artillery Commander is free from a multiplicity of objectives imposed upon him so that he has to do a lot of small jobs and cannot "utilize all his power at the right place at the right time".<sup>2</sup>

Thus we are fully in agreement with the following opinion presented by a Colonel.<sup>3</sup>

"Artillerymen at the G.M. Division level must be the ones to coordinate fire, by means of radio".

Finally, it goes without saying that the Commander of an operation should make his artilleryman take part in the working out of his plans. This has not always been the case:

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<sup>1</sup>Colonel X, commanding a G.M.

<sup>2</sup>Lt. Colonel X, commanding a division artillery.

<sup>3</sup>Colonel Y, commanding a Light Division Unit.

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"Too often the artillery leader is not consulted at the time a plan is conceived. He comes in too late to propose any changes and, what is even more serious, there is meddling on the part of the Interbranch Command in the implementation itself".<sup>1</sup>

These various opinions show, therefore, that efforts must be made both in the various branches and within the artillery framework to make the prerequisites of successful cooperation better understood.

COORDINATION OF ARTILLERY AND AIR FIRE - This problem is certainly similar and as important as was the problem at one time of the infantry-artillery liaison".<sup>1</sup>

But the problem has to do with both timing and space.

First of all with regard to timing, because "the infantrymen believes that delays in intervention sometimes are too long and break the rhythm of his manoeuvre".

"The artilleryman finds himself obliged to lift his fire "in order to allow the air attack to intervene"<sup>1</sup> and the two branches (artillery and air) complain of the "fire hole" (gap) which separates the action of the planes and that of the cannons.

But the problem also has to do with space because the targets must be clearly pointed out to the planes and the planes must be guided if necessary.

Now, the P.G.A. (air guiding post) is at the G.M. echelon, that is to say that it is too far away to see and to guide. The D.L.O. artillery officer, who might be thought of to ensure, if not the guiding, at least an accurate defining of the targets, already has a great deal to do and, considering his material working conditions, he could not be loaded down still further by putting him

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<sup>1</sup>Colonel Y, commanding the Artillery of Tonkin.

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in charge of a very-high-frequency radio, without even mentioning the technical training which would be necessary to make him capable of guiding the patrols.

"The method, often used, which consists in entrusting the guiding to a light observation plane, which brings together the two prerequisites of "seeing" and being able to transmit, has sometimes given good results, but this method also has the disadvantage of giving the observation plane a responsibility and a power of decision which are not within its realm".<sup>1</sup>

Artillerymen have therefore proposed that as far as the tactical group echelon was concerned the group leader should be the actual coordinator of fire, the light observation plane only being a "required intermediary" (with which, by the way, contact should be maintained permanently during the essential phases of combat).

But, assuming operations of the European kind, observation planes would run the risk of being stopped by enemy fighter planes or anti-aircraft defense. The artillery group should also be provided with a V.H.F. radio set to allow the group to at least be able to listen in on the conversations of the planes carrying out a direct support mission, and, if possible to enter into contact with the crews to receive some very necessary information (for example: start and end of the intervention, etc.).

Artillerymen would thus be able to make requests for air support and halt their fire as soon as friendly planes are about to enter into action. They would resume fire as soon as the announcement is made that the intervention has ended.

GROUP SECURITY - During the entire campaign "the artilleryman was a choice prey

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<sup>1</sup>Colonel X, commanding the Artillery of Tonkin.

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for the enemy"<sup>1</sup> and the reflex of close-in defense replaced that of taking cover in a European war.

The security of the groups was always provided by combining batteries with an infantry unit and, at the end of hostilities, the Viet-Minh strength had grown to such an extent that the following could be written:

"An infantry battalion is indeed necessary to protect or escort the artillery group in the face of a vigilant enemy".<sup>2</sup>

In a European theater of operations the dangers encountered by the artillery would without a doubt be less than those inflicted on our batteries by the Viet-Minh foot soldier at night and even during the day, when the situation was appropriate for ambushes or just for mortar harassment.

The cadre, however, should be careful not to forget that enemy planes and cannons will not be the only elements menacing them because times will come when they will be situated in regions where partisans can intervene. Besides, the foreseeable shape of the operations (combat on broad fronts, existence of large gaps between large units, etc.) could mean that deep infiltrations by enemy tanks and infantry will not be unusual.

Close-in defense will continue, therefore, to be one of the main worries of artillerymen and they will have to seek out new solutions by making use of what they have done and seen in Indochina.

It seems that a solution should first of all be found in the utilization of the cannon itself<sup>3</sup> and in strengthening the close-in defense teams which should be provided with a light and well adapted weapon.

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<sup>1</sup>Colonel Y, commanding the Artillery of Tonkin.

<sup>2</sup>Colonel Z, commanding a Mobile Group.

<sup>3</sup>See p. 100 for footnote.

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<sup>3</sup>This method "whose effectiveness has proven to be great in Indochina, is not sufficiently studied in France by the units. This is a serious error". (Colonel X, commanding the Artillery of Central Vietnam). We must point out here once more the great interest attached to an all-azimuth cannon (rapid directional adjustment) and to a projectile which is suitable for this mission of close-in defense (bullet projectile, or canister).

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In addition, each group should organize itself as a center of resistance and make of itself a small reserve which could counter-attack or at least fill <sup>4</sup>in a breach.

"Artillery security should be studied in great detail (personnel, weapons, vehicles), but above all the training programs should be changed and the training of the foot soldier should be given the same importance as the training of the artilleryman. The implications of artillery action require this".<sup>5</sup>

Also, some basic notions have been lost slight of by fighters in Indochina: dispersion, camouflage and sometimes the topography of the ground<sup>6</sup>. Low-grade officers and NCO's should be retrained on these points and they should be reminded above all that in a European theater of operations any error in this respect is paid for dearly.

In particular, "the scorn manifested by cannoneers for work with pick and shovel brings us to suggest that tasks having to do with organization of the ground should be emphasized in field services as far as possible and not just roughly pointed out!"<sup>7</sup>

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<sup>4</sup>This mobile reserve would be effectively made up of M 16 halftracks which would have a dual mission: anti-aircraft defense and close-in defense.

<sup>5</sup>Colonel Y, commanding a Mobile Group.

<sup>6</sup>Areas where digging could be done were rare, the phreatic layer generally being very near the surface of the ground.

<sup>7</sup>Colonel Y, commanding the Artillery of Tonkin.

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In conclusion, the Indochinese war, despite the peculiar conditions which characterized it, has proven the principles of employment and the implementation of the artillery.

The Indochina war also gave all of the cadre of the Branch and in particular the younger ones the opportunity to obtain wartime experience and to observe a quantity of cannon shots which was greater than what they would have been able to fire off during 20 years of firing schools.

The Indochinese war finally pointed out that the Artillery is the chief trump-card of the Command and that it was necessary to return little by little to the methods of firing coordination which are used in Europe so as to meet the increase in enemy potential and to increase the development of our own forces.

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## CHAPTER V

### THE ENGINEER CORPS

The great work done by the Engineer Corps in Indochina was accomplished under conditions a great deal less favorable than in Europe: harsh climate, communication networks which were just as rare as they were uncertain, scarcity of certain materials and difficulties in supplying workshops, etc. Besides, the engineers had to engage in daily struggle against a variety of sabotage and destruction while at the same time carrying out the defensive and logistical equipping of the various territories.

The conventional rules for setting up and utilizing this Branch nevertheless were able to hold out against this prolonged ordeal and the basic lesson of this campaign was the affirmation of their value.

It is not necessary to add that engineers of all grades found in Indochina

an opportunity to enrich their knowledge and to demonstrate ceaseless ingenuity.

ORGANIZATION AND EMPLOYMENT OF THE UNITS - The too small proportion of the Engineer Corps within the framework of the Expeditionary Corps resulted in embarrassing consequences in the most diverse fields and in particular as regards the development of the units.

The basic unit, i.e., the combat battalion (Indochina type), had the same general structure as divisional battalions of the European type. Nevertheless, this unit only had two or three combat companies (according to the case). In addition, its headquarters and services company was lightened considerably.

Also, the insufficient numerical strength granted to the Branch does not make it possible to set up a sufficient number of general reserve units to support and reinforce the combat battalions.

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This has not failed to have its ill-effects:

"The entire Corps of Engineers was in the advance position and didn't have any support behind it".

"Motorized equipment deteriorated rapidly and was not repaired. The operating equipment placed on the spot was rarely replaced. There was no unit of the Army Corps of Engineers type to build permanent bridges and to free the operating equipment".<sup>1</sup>

Besides, the combat companies were torn between escort missions for the Mobile Groups during operations and missions which were given to them by the Corps of Engineers commanders of each region to set up the various territories. These contradictory obligations always ended up in a poor comprise: sometimes certain workshops were stopped momentarily in order to meet more urgent tasks, sometimes the units were broken down into detachments which were reduced to the absolutely necessary minimum to satisfy various demands.

This crumbling even resulted in dissociating the companies. The platoons which were detached in this way had to take charge of isolated workshops, with all of the inconvenient results which were pointed out consistently by the engineers:

"It was extremely difficult and delicate for a unit commander to exercise true control inasmuch as each one of the platoons were working at approximately one hundred or one hundred and fifty kilometers from the unit".

"The role of the company commander of the Corps of Engineers was often limited to this: giving the working means to the platoon leaders, the technical role was most often given over to the platoon leaders".

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<sup>1</sup>Report by the Commanding General of the Corps of Engineers in the Far East.

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"In order to meet necessities, it would have been necessary to place at the disposal of the division commander an engineer battalion with four combat companies (the engineer battalion of the type used in infantry divisions in metropolitan France)".

"This battalion would have been supported by a battalion having two companies:

- an equipment and pontoon transport company,
- a maintenance and supply company (3rd echelon).<sup>1</sup>

"The reinforcements used as a general reserve should have been at least one-half of the numerical strength of the divisions. It would also have been necessary to have a supply battalion for each three combat companies engaged".<sup>2</sup>

In brief, the engineers demanded that the set-up of metropolitan France be resorted to because they considered that this set-up was the best solution to local problems.

The utilization of the units of the Corps of Engineers also would have been improved if the rules of employment of this Branch had been better applied.

These rules unfortunately were not very well known by the cadres belonging to the Branches and it often occurred that Engineer officers received not a mission but an order to put at the disposal of such or such authority a definite unit (squad, platoon, even a company) without any indication as to the nature of the task which would probably be assigned to the engineers.<sup>3</sup>

"This irregularity was regrettable because this compromised both the re-

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<sup>1</sup> Battalion leader X, commanding the Corps of Engineers adapted into a Marching Division at Tonkin.

<sup>2</sup> Report by the General commanding the Corps of Engineers in the Far East.

<sup>3</sup> See p. 105 for footnote.

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<sup>3</sup>The fact that a platoon was attributed to a Mobile Group led certain G.M. commanders to push the adaptation as far as giving a squad to each battalion. This carving-out naturally ended up in a poor result because an engineer deprived of his equipment and equipped with a shovel does not produce a yield which is any greater than a foot soldier equipped with the same tool. The use of the Corps of Engineers in small packages resulted in grave consequences which have to do first of all with the lack of cadre sufficiently competent to be effective and secondly with the fact that a platoon is not equipped for liaison, repair of equipment and supplies for living for long periods of time isolated from its company. "Even if the problem can be solved on the platoon level it becomes impossible to solve it when the platoon itself is dispersed all over the place" (Lt. X, platoon leader in Central Vietnam).

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spective mission and the other possible missions".

"Engineers at all times and of all nationalities, always anxious to carry out their missions, have not ceased and shall never cease to fight against orders which determine the means instead of the mission".<sup>4</sup>

"The generally allowed principle of adapting a priori a company or a platoon to a given group is irrational. This runs the risk of leading to lateral reinforcement or sliding movements during the very combat. These movements, which are unforeseen, may result in irregularities in the manoeuver or in a delay in its progression".<sup>5,6</sup>

Under other circumstances the Corps of Engineers was the victim of too strict secrecy requirements and it didn't receive any information, even approximate information, concerning its future missions and, consequently, on the equipment which it should carry along.

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<sup>4</sup>Report by the Commanding General of the Corps of Engineers in the Far East.

<sup>5</sup>Battalion leader X, commanding a battalion in Tonkin.

<sup>6</sup>It is nevertheless desirable that the same units of the Corps of Engineers remain under this or that Tactical Group when this adaptation becomes necessary in order to facilitate liaison. This necessity of personal relationships which create mutual understanding is frequently stressed in reports by Engr. Corps officers.

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"The engineer then had to have recourse to guesswork, this resulting in a loss of time and the need for technical surveillance, even having to go back".<sup>1</sup>

"Operations which were studied and prepared (such as the type of Brittany 1952, Jura or Upper Alps 1953) didn't result in any surprise or after-taste".

"Operations which were hastily prepared (of the "arc-en-ciel" - rainbow - type) presented certain difficulties".

"Improvised operations (of the Lorraine type in 1952) saw increased difficulties and disappointments".<sup>2</sup>

During the working-out phase of the plans for a future operation the Commander must not only inform the Corps of engineers of its future task but also of the available details necessary to carry it out.

But, "a distinction must be made between the technical time necessary to carry out the mission and the tactical time granted the operation Commander".<sup>3</sup>

The technical time is determined by thorough study and cannot be condensed unless certain modifications are granted concerning the very nature of the work: to allow, for example, that the restoring of an itinerary be of a limited duration. An exaggerated condensation of the timetable always leads to disappointments.

"The engineer establishes a time period for carrying out repairs. He absolutely cannot reduce this schedule. He has often been requested to repair only a few vehicles by a given hour. This attempt at bargaining obviously cannot be successful. A defect is either repaired or it isn't repaired.

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<sup>1</sup> Leader of Battalion X, commanding a battalion in Tonkin.

<sup>2</sup> Report by the Commanding General of the Corps of Engineers in the Far East.

<sup>3</sup> Report by the Commanding General of the Corps of Engineers in the Far East.

## OFFICIAL USE ONLY

"A few twists and turns cannot be carried out in advance on a defect".<sup>1</sup>

On the other hand, the tactical time is forced upon the commander by the needs of the manoeuvre and the engineer should be informed of this.

However, the stoppage of a job before it is completed should always be avoided and too frequent changes in program always result in chaotic achievements.

This communication of intentions from headquarters should not be intended only for the division echelon and above.

"The intervention of units or platoons of the Corps of Engineers as an accompaniment to a Mobile Group or an infantry battalion should be coordinated before the operation by means of preliminary contacts between the operational command and the engineer battalion command".

"In the light of the intentions of the leader responsible for the carrying out of the combat, information on the enemy and the terrain taken from the G2 and the G3 of the large unit (photographic documents, in particular aerial views of the routes are very important in this regard), the commander of the Corps of Engineers determines the size of the forces and means to be used and decrees their utilization".<sup>2</sup>

Nevertheless, we have seen cases of operations, having to do with crossing water or difficult restoral of a route, being entered into without consulting the Engineers Corps. The selection of the crossing points and the definition of the route had been established without taking technical requirements into consideration. Naturally the manoeuvre was hurt by this.

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<sup>1</sup> Lt. X, commanding an engineer platoon in Operation Atlante.

<sup>2</sup> Leader of Battalion X, commanding a battalion in Tonkin.

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During the "Flandres" operation, for example, it was necessary to carry M2 boats with their engines on the shoulders for a distance of several kilometers because of the absence of a route whereas an engineer unit could have easily brought them along on trucks if it could have selected at the right time another means of access.

During the same operation: "the crossing of the DAY near X by two battalions on August 28, 1953 could have been carried out with a time saving of two hours if the designated spot had been known by the engineer who did not know of it because of the secrecy of the operation".<sup>1</sup>

The commander of the Corps of Engineers should then also be able to follow very closely the unrolling of an operation so as to be able to foresee soon enough the volume and type of means which are necessary.

Some officers write: "it would be desirable for the battalion leader of the Corps of Engineers to be able to have a reconnaissance plane at his disposal. Flying over the zone where the fighting is to be carried out would permit him to quickly obtain valuable additional information on the routes and consequently to determine accurately the methods for crossing the zone or the equipment to be used".<sup>2</sup>

The Engineers Corps not only had to deplore certain blunders. It sometimes had to fear the meddling of certain leaders in the development of the technical tasks and it has commented on this, not without witticism:

"In small operations the tactical leader knows neither the possibilities nor the frustrations of the engineer. Then one fine day he discovers something: the bulldozer for example".

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<sup>1</sup>Captain assisting the commander of an engineer battalion in Tonkin.

<sup>2</sup>The U.S. engineer battalion has 3 light observation planes in its organization.

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"From that time on, the tactical leaders know all about the bulldozer. His engineer will no longer be able to shift the bulldozer without having to provide numerous explanations. Advice will be given to the engineer, certain modes of employment will be required. The engineer will be replaced. The engineer, in despair, will see a new apprenticeship being carried out to the detriment of the mission".<sup>1</sup>

On the other hand, the task of the Corps of Engineers often would have been made easier if its users had spared it all of the jobs which could have been accomplished by infantrymen or simply a work force guided by the cadres:

"The major part of the destruction missions of Viet-Minh field organizations entrusted to the engineers could have been done by units of pioneers belonging to the Mobile Groups or assigned to them. They presented no particular difficulty outside of carrying explosives".<sup>2</sup>

It also would have been necessary to support the Corps of Engineers by providing it with assistants to carry its equipment or materials.

"The engineer often needed manpower. This manpower should be provided for him, if possible, without any haggling, since it always brought about a considerable gain in work done."<sup>3</sup>

"Maintenance and repair work on communications are not possible unless relative security is provided against guerrilla activities in the zone where the workshop is located and for the network of routes which connects it to its base".

"The engineers have enough to do (and their armament facilities permit

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<sup>1</sup> Report by the Commanding General of the Corps of Engineers in the Far East.

<sup>2</sup> Report of the Commander of the Corps of Engineers in Tonkin.

<sup>3</sup> Captain X, commanding an engineer company in Tonkin.

# OFFICIAL USE ONLY

this) in providing security immediately around the workshop. They cannot guarantee (and in this case accomplish any work: either the tool or the rifle must predominate) a security cover of a thread-shaped zone where there are carried out at a definite time during the entire daytime jobs which are very easy to spot".<sup>1</sup>

NEW MISSIONS - Among all of the numerous missions which the Engineer Corps had to undertake during the campaign there are two which presented for the Corps a characteristic novelty even though some units of the Corps had already carried them out in 1944-1945.

The carrying out of the operations required, in effect:

- the modernization of the air infrastructure and the fitting out of numerous operating grounds,
- the establishment of all of the beachings and wharves necessary for the traffic of river boats.

In 1946 there were three equipped airfields and four middle-category airfields; but in 1953 it became possible to give to aviation three airfields in the international class and nine secondary airfields, without counting the numerous operational landing fields.

The tasks having to do with the setting up and enlarging of large ground areas had been conceived of by aeronautics which subsequently became the Vietnam Bureau of Air Infrastructure.

The Engineer service assisted in these tasks, in particular by building all of the attached installations and, of course, all of the close-in defense set-ups (blockhouses, barbed wire, lighting, etc.).

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<sup>1</sup>Colonel X, Conference on the infrastructure problems inherent in the Indochinese theater of operations.

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The operating grounds were prepared, according to the case, for Moranes, Dakotas or helicopters.

These grounds were relatively easy to create in middle regions because the ground was generally solid. Also, the utilization of mechanical means of terrassing made it possible to create landing strips in three days for the Morane and in ten days for the Dakota. The utilization of P.S.P. plates<sup>1</sup> made it possible subsequently to utilize landing strips even during the rainy season.

In the deltas, on the contrary, the weak carrying strength of the ground and the small amount of ground surface outside of the water, required even for the smallest area, very extensive work in setting up embankments and then in draining them.

"The volume of digging of the infrastructure of the airport of KIEN-AN was estimated at the considerable figure of 500,000 cubic meters. The work of ballasting which was carried out or foreseen, including side routes, required more than 500,000 cubic meters of roughstone, broken stones or gravel".

"This is not to mention the quantity of equipment which had to be put to use: vehicles, bulldozers, levellers, steam-rollers, manpower".<sup>2</sup>

The wealth in the network of navigable waters and the size of our river traffic caused the Corps of Engineers to establish numerous beachings for drawing alongside by the L.S.T.'s, if possible, and as a minimum, for the L.C.T.'s which were used the most.

As a result of the large variations in the level of the water currents, these beachings were inclined at 15% and were sufficiently long to be usable

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<sup>1</sup>Unfortunately the plates were only available in an insufficient number for a long period of time.

<sup>2</sup>Report by the General commanding the Corps of Engineers in the Far East.

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regardless of the height of the waters.

But the lack of consistency in the banks of the rivers sometimes caused the same difficulties as in building the abutments of a bridge: Piles had to be driven up to as many as 25 to the cubic meter on occasion in order to obtain sufficiently firm foundations.

In regions where canals were often made use of, it was often necessary to blow up land barriers which the enemy had erected with tremendous manpower. They had to be destroyed by means of explosives but the employment of explosives was often disappointing because their effectiveness was very low.

Finally, the Engineer Corps took charge of part of the transport by water and "its self-propelling barges and towboats rendered inestimable service, especially in the area of Haiphong and in the southern part of the Tonkin delta".<sup>1</sup>

The Engineer Corps carried out these new missions along with its traditional missions: maintenance and repair of communication networks, mine-clearing, fortifications, preparation of barracks and the most diverse installations, etc.

But the variety of tasks and certain errors in utilization sometimes led the engineers to provide fruitless efforts or efforts which were out of proportion to the goal sought.

A sense of what is possible ought, in the opinion of engineers, always to govern the decision of commanders and the testament of the Branch at the end of the war of Indochina is, in a few words:

"The accomplishments of the Engineers remain inscribed on the land and it would be wise to place on all works the name of the man who had the idea and specified the characteristics thereof".

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<sup>1</sup> Report by the General commanding the Corps of Engineers in the Far East.

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"The prospect of being judged by his equals would no doubt make more than one leader think twice".<sup>1</sup>

<sup>1</sup>Report by the General commanding the Corps of Engineers in the Far East.

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## CHAPTER VI

### THE SIGNAL CORPS

In 1946 the Commander-in-Chief was informed as to the situation in the different cities in Indochina by the coded messages which could be provided by a few radiotelegraphy sets and on December 19th he was unaware for a long time concerning the fate of numerous detachments.

On July 20, 1954, the same authority was able to speak from his office in Saigon to all of his chief subordinates without fear of being listened in on by the enemy. He could receive information more or less quickly (but never having to wait more than a few hours) on the resistance of an isolated post in the most hostile region; two months earlier he had been able to give verbal instructions to the defenders of Dien-Bien-Phu; during his inspections he was able to alert air units, to become informed as to the position of the smallest sea craft, to hear the conversations of his artillerymen and he knew that the furthest skirmisher could send and receive private telegrams almost as quickly as a villager in France.

The remarkable results were the fruit of constant efforts to adapt and improve. Also, the experience obtained by the Signal Corps in long-distance communications and the extensive use of the radio can be credited to the war of Indochina and the principal teachings obtained in this field should be particularly stressed.<sup>1</sup>

In addition, the very difficult conditions under which the various apparatuses had to operate, in particular as regards a climate which was exceptionally

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<sup>1</sup>The encoding problem shall also be treated in this chapter, although the Encoding Service is separate from the Signal Corps.

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hot and humid, made it necessary to carry out a very rigorous selection.

Thus we can state: "The equipment which proved satisfactory during the campaign of Indochina has acquired a certificate of merit which guarantees its good functioning in any other theater of operations".<sup>1</sup>

USE - The signal Corps suffered much like all the other Branches, from a shortage of manpower. This shortage was particularly felt in the case of specialized personnel.

The solution of on-the-spot training of radiomen and repairmen makes it possible to satisfy somehow or other the quantitative needs but at the loss of quality and this resulted in an abnormal expenditure in equipment. This defect was not peculiar to the Signal Corps. In the infantry, in particular, ignorance and negligence brought about the loss of a large number of radio sets.<sup>2</sup>

The lack of knowledge exhibited by certain officers as regards the utilization, drawbacks and possibilities of signal equipment also complicated the task and it is perhaps not without reason that a Signal Corps commander of a territory wrote:

"The Signal Corps is a branch of Headquarters. I don't know who invented this notion nor who implemented it but it seems that Headquarters is the only one not aware of this".

"This is perhaps owing to the highly technical nature of our activity which discourages many people from taking up its study. But we are astonished at the lack of knowledge of this field by some leaders who go as far as to

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<sup>1</sup>Captain X, signal officer in a G.M.

<sup>2</sup>The losses were also because of the circumstances of combat. The model 694 sets, in particular, which were carried by coolies were often abandoned by them as soon as things got bad for us.

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boast that they know nothing of signal communications, without admitting for a moment that a knowledge of the rules of utilization of signal equipment, just as in the case of armaments, constitutes a part of the overall professional knowledge which any officer should possess".

It may, however, be pointed out that many of the reported problems would disappear if the Signal Branch was always represented by a qualified officer at the principal general staffs and in particular at the G3. The setting up of signal commands too often resulted in intermittent contacts between the signal people and the general staffs instead of the contacts being on a continuous basis, as they should be.

The characteristic features of the struggle against the Viet-Minh caused a territorial arrangement of our forces, the cell of which was the post or the sensitive point and the various organs were the battalion defense area, the subdivision area, etc.

The communications required for this surface war arrangement therefore assumed the aspect of a series of spider webs which were more or less loose but which covered the entire surface of the areas we wished to control. Superimposed upon this set-up of fixed communications were the networks of the mobile forces which deployed at each operation and whose aspect generally was varied.

In addition, it goes without saying that the insecurity of all of the communication networks forced signalmen to make practically exclusive use of radio wire and the courier could only be utilized under favorable circumstances.

These various considerations explain the two changes which were made in the conventional operation of the Signal Corps. First of all, the old principle: liaison goes from the superior to the subordinate, remained valid for ground forces but it was difficult to apply in the case of mobile units (G.M.).

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in particular) because they were placed in turns under regional authorities<sup>1</sup> and it was simpler for them to come into contact with their subsequent employers.

The necessary means were therefore given to the various operating units to ensure all of their liaisons. The system provided good results.

In the second place, it was necessary to derive maximum benefit from the meshing of territorial and operational communications and thus a simple method of intercommunication was established.

Any user was authorized to contact any station of the neighboring networks and received for this purpose information concerning his possible correspondents (call signs, frequencies, etc.). In addition, a system of permanent listening in the form of "security watches" was imposed on the several authorities below the echelon of sub-sector commanders.

This procedure rendered valuable service and is worthy of adoption under all war conditions where there is particular need for lateral signal communications. It, however, has the disadvantage of requiring that the characteristics of many networks be made known and thus increases the risks of compromising a very secret document. This danger was grave in Indochina because the capture of a post or the encirclement of a friendly unit were frequent.<sup>2</sup> Also, in the last few years of the war it became necessary to check the authenticity of the stations prior to any exchange of messages. Despite these verifications and the doubt which might have arisen as to the true identity of a correspondent,

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<sup>1</sup>When a general staff was created it was usually made up of one of the ground (territorial) commands and used the communication means of this command.

<sup>2</sup>Most of the time it was not possible to know whether the instructions for destroying documents had been obeyed after a station was forced to close down.

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the advantages of intercommunication proved to be greater than the disadvantages.

CODING - The campaign of Indochina was still another occasion to find fault with the coding procedure. This procedure was criticized, as usual, as considerably delaying the progress of telegrams because almost all of the classified messages<sup>1</sup> had to go through the coding areas and became bottled up on many occasions.

The very clear abuse which was made of indications of urgency or secrecy by senders added needlessly to the work of coding. It therefore seems that the replacement of conventional urgency indications by a simple notification as to transmitting time which is not to be exceeded would make possible a more precise classifying of the messages.

In addition it would be a good thing for an officer in each general staff to be entrusted with controlling the messages and to be given the right to change urgency or secrecy indications if necessary, so as to avoid any abuses.

But these various measures could only be palliatives because "coding services under their present form are no longer adapted to the needs which arise from extensive use of radio, and the camouflage procedures which are used to palliate the deficiencies in coding only provide an illusory security".<sup>2</sup>

The utilization of coding teleprinters in many cases would have made it possible to limit transmitting problems resulting from the overloading of encoding stations.

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<sup>1</sup>Only messages carrying the indication "Secret-Confidential" or "Restricted Use" were not subjected to encoding per se, they nevertheless had to be disguised by the sender prior to being handed over to the Communications Center.

<sup>2</sup>Lt. Colonel X, commanding the signal communications of a Territory.

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In order to maintain secrecy it became necessary to double the the encoding networks and to frequently change procedures and code tables.<sup>1</sup>

This situation rapidly led to a very large multiplicity of codes and documents which had to be revised.<sup>2</sup> Despite the efforts of the central coding section of the Expeditionary Corps it scarcely had any reserve procedures at the time of the cease-fire.

On the other hand, the necessity of setting up a method of support which did not utilize any document was felt early in the war. Two mnemotechnic codes established by the central coding section of the Expeditionary Corps and approved by the coding section of the E.M.A. (War Department General Staff) were retained. These codes rendered inestimable service, especially during the last months of operation.<sup>3</sup>

Despite this achievement, "the problem of the relief coding procedure has become so important that it should be studied once more by a joint committee of coding services."<sup>4</sup>

The transmission of radiotelegraphy messages was not the only source of information offered to the enemy. Radiotelephony messages proved to be still more dangerous. Now, experience has shown that it was difficult to require disguising by any method, no matter how simple.

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<sup>1</sup> Report by the central coding section of the Expeditionary Corps.

<sup>2</sup> From February to November, 1954, the printing press of the central coding section of the Expeditionary Corps printed close to 200,000 pgs. of coded documents.

<sup>3</sup> In June, 1954, 650,000 groups encoded by means of the "VENOC-MNEMO" process were exchanged by all the troops of the Expeditionary Corps.

<sup>4</sup> Report on the lessons of the campaign of Indochina by the Central Coding Section of the Ground Forces of the Far East (F.T.E.O.).

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It is true that secret telephone devices<sup>1</sup> have rendered valuable service but their cost and weight made them usable only at a high echelon. Thus, the commander of the Signal Corps of a Territory proposed "outlawing open conversations and requiring careful preparation of radiotelephone messages. Although the transmitting speed is adversely effected, on the other hand, the security is improved and the benefits are on the whole certain".

EQUIPMENT EFFICIENCY<sup>2</sup> - Large-scale command liaisons were almost always provided by stationary or semi-stationary equipment and we cannot exaggerate the excellent service rendered by the microwave networks.

This equipment not only made it possible to maintain telephone communications between the principal headquarters but also to establish, in certain instances, operational communications right up to the divisional command post level.

The quality and the sturdiness of the communications obtained over several years<sup>3</sup> have justified this statement by the commander of the Signal Corps of a Territory:

"Microwave cables have become the ideal means of transmitting between the command posts of large units".

It should, however, be pointed out that the equipment which was made available to signalmen was much greater numerically speaking than that which had

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<sup>1</sup>C.F. 1 sets and, above all, A.Z. 13's.

<sup>2</sup>This report will not take into consideration the advanced state of wear and tear of certain equipment which were kept in service too long and obviously resulted in disappointments.

<sup>3</sup>Experience has shown that it was sometimes possible to establish communications via microwave cables beyond the optical range. But in this case the quality and stability of the communications suffered.

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been granted them officially at the same period in France. This increase in equipment must be maintained<sup>1</sup> and it would be advantageous to extend these facilities right up to the regimental command post echelon or the tactical group echelon.

The ANTRC 3 and ANTRC 4 microwave cable equipment which were used made it possible to operate four telephone channels simultaneously.<sup>2</sup> It sometimes became necessary to mount several of them in parallel.<sup>3</sup> But a single apparatus with twelve or eighteen channels would have resulted in considerable savings in equipment<sup>4</sup> and such an apparatus should be used for Army-level command posts.

The displacements of command posts resulted in interruptions in communications of about six to twelve hours and it seems that dismanteling and reassembling operations could be simplified in order to reduce delays.<sup>5</sup>

V.H.F. terminals should be provided for the tactical group command posts above all in defensive situations because the usefulness of this solution is less obvious during offensives.

"It is possible, however, that the creation of microwave cable equipment which is appropriate, light and easy to put into operation could revise this conclusion".<sup>6</sup>

As regards long-distance communications, the B. 72 French equipment pro-

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<sup>1</sup> This increase, by the way, is being achieved in France.

<sup>2</sup> or else 3 telephone channels and four teletype channels.

<sup>3</sup> four between Hanoi and Haiphong.

<sup>4</sup> Such equipment exists in the prototype stage.

<sup>5</sup> Some of this equipment was mounted onto trucks thus greatly increasing its mobility.

<sup>6</sup> Colonel X, commanding the Signal Corps of a Territory.

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vided excellent service owing to its power (600 watts) despite being cumbersome. This equipment, when associated with AZ 13 secret telephony equipment, made it possible to create good radiotelephone communications at distances of up to 500 kilometers.

Its primary disadvantage lies in its mechanical instability which makes moving the equipment a very delicate operation.

The American BC 339 (k KW) set, combined with a 10 KW AN/FRA 2 amplifier, was used for large-scale radiotelegraph communications. Its range made it possible to establish communications between any points in Indochina.

But an innovation consisted in using American single-side-band equipment. Two sets of this type with a power of 4 kilowatts made it possible to set up (in addition to a radioteletype link) an extremely accurate radiotelephone link between Saigon and Hanoi without the necessity of using a special AZ 13 set to achieve secrecy in the communications.

Besides the above equipment, the SCR 399 (400 W) used for command liaisons confirmed the services rendered during the preceding campaign. Its transmitter, the BC 610 i used in radioteletype, was fully satisfactory.

The field equipment of the old type<sup>1</sup> sometimes gave results which were inferior to what could have been expected, because of the climate and the way it was used. This was the case, in particular, for the SCR 536. It was risky to place trust in this set.

On the other hand, the quality of the other sets were proven by means of putting together repair shops which were clearly larger than those provided for

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<sup>1</sup>We shall not deal with sets which were completely out-of-date. Belonging to this category were most of the sets of English make and the U.S. 194 - S.C.R. 195 - S.C.R. 284.

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in Europe.<sup>1</sup>

- in the range of infantry sets:

The S.C.R. 300 provided good service despite the difficulties which were often encountered in its battery operation.

The S.C.R. 694 was appreciated for its sturdiness and its ease to carry.

- in the range of armored sets:

The S.C.R. 528, 506 and 193 were appreciated for their stable operation. The 193, which was more complicated to operate than the 506, required specialized personnel who were sometimes difficult to find.

- in the range of artillery sets:

The S.C.R. 610 and 628 provided the same service as their counterparts in the range of armored sets.

The S.C.R. 609 set which was given to the D.L.O.'s was considered to be heavy, cumbersome, easily detected and difficult to transport.

- in the range of air support sets:

The S.C.R. 522 and 542 were considered to be satisfactory.

During the final phase of the campaign, new American equipment was placed in service and resulted in interesting remarks.

"These sets (ANPRC 6, ANPRC 10, ANGRC 5, ANGRC 9, ANTRC 7) perform excellently but some of them are of a mechanical delicateness which causes a high degree of breakdown. A few relatively simple modifications would make it possible to lessen these imperfections".<sup>2</sup>

The principal defects noted also have to do with accessories such as the

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<sup>1</sup> Equipment of French manufacture was very satisfactorily comparable to its American counterpart.

<sup>2</sup> Colonel X, commanding the Signal Corps of a Territory.

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antennas, compounds, cords, buttons, etc.

The ANGRC 5, in particular, which according to American specifications was capable of providing a year of service without any need for spare parts, had premature failures.

Service maintenance of many types of sets greatly increased the burden on the Signal services.

"The complexity of the depots<sup>1</sup> containing parts which were individually very light and of very diverse types proved to be considerable. No inconvenience resulted therefrom because these depots never had to be moved but the same would not hold true in a war of movement".

"A solution might be to increase the importance of the Division and of the Army Corps in the organization of signal logistics".<sup>2</sup>

In summary, the signal communications of the Expeditionary Corps operated primarily thanks to radio liaison. Experience has shown that liaison by radio was both very flexible and easy to operate. On the other hand, such communications are easy to jam and even easier to intercept.

The absence of any other technique to compensate for any possible collapse in radio communications is therefore dangerous and it is urgently required that efforts be made to find replacement methods which in a European war might perhaps be the only way of meeting the problem.

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<sup>1</sup>1000 tons for advance establishment of the Hanoi equipment - 500 to 600 tons for the communications park of the B.O.T.K. in Haiphong.

<sup>2</sup>Colonel X, commanding the Signal Corps in a Territory.

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## CHAPTER VII

### THE USE OF DOGS IN WAR

Indochina made it possible to confirm the service which dogs could effectively render in either a T.O.E. (Far East theater of operations) or in a European war.

In 1948 a first detachment of 20 animals, originating from Germany, was sent to the Far East and this number increased progressively.<sup>1</sup> The veterinary service, which had taken charge from 1952 of all problems dealing with dogs, was led to establish several types of formations corresponding to the various uses made of the dogs:

- Operational canine commandoes generally made up of 8 "sentry-patrol" dogs and trainers provided by the veterinary service. They were supposed to support the infantry in detail operations such as the opening of routes, reconnaissance patrols, searches of villages and suspicious areas, night ambushes within a battalion area or a sub-sector, in short in all of the circumstances where each team (man, dog) could assume the role of an advanced scout.

- Mine-clearing canine commandoes of the same type as the preceding ones but used for detecting mines when routes are opened up (the dog having been trained to "feel out" ground which has been stirred).

The other units would be used to guard air bases or sensitive points of all kinds: gasoline depots, ammunition depots, supply depots, art masterpieces, etc.<sup>2</sup>

<sup>1</sup> More than 300 German shepherd dogs were used by the end of hostilities.

<sup>2</sup> A canine commando of the P.A. (artillery park) of Gia-Loc (8 kilometers to the south of Haiduong - North Vietnam) on several occasions prevented the approach of Viet-Minh units who came at night for reconnaissance or to lay mines near the outside circumference of the post.

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In the beginning the dogs were used individually but subsequently they were grouped together into teams of from 4 to 12 dogs which were called as follows, according to the size of the area to be watched:

- Canine group for large patrols (for sensitive areas).
- Canine alert team (for sensitive points).

The trainers were provided by the unit using the dogs and the trainers had to complete prior training at the army dog-kennels in Saigon.

Finally, in many posts local dogs of all breeds were used to give the alert.

On the whole, the dog turned out to be less resistant than man to the climate and the results obtained were inferior to those which might have been hoped for after raising and training them in Europe.

The work of the dogs was first of all limited by various factors:

- the transplanting of the dogs coming from Germany caused serious losses. Besides, the heat made it practically impossible to use them from 10 A.M. to 6 P.M. and the nature of certain terrain (flooded ricefields and thick forests) caused the dogs to lose a great deal of their sense of smell.

- because of lack of proper training, the teams were not accustomed to fire and proved to be unusable as soon as fighting began.<sup>1</sup>

- the requirement of periodical return to the dog kennels<sup>2</sup> reduced the periods of utilization of the dogs.

- On the other hand, experience has shown that individual use of the dog was not advisable because the animal quickly lost his talents and often became

<sup>1</sup> In May, 1954 in North Vietnam, canine commandoes in service (village searches and night ambushes) were taken by panic right from the time the firing began.

<sup>2</sup> Generally after three weeks of use.

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a "personal property" devoted to his master but no longer possessing any military value.

The operational canine commandoes brought interesting results. In particular as regards the searching of villages and the uncovering of underground hide-outs. Only the physical resistance of the animal limited this utilization for which the military canine is particularly well-suited.

The performance of the mine-clearing canine commandoes was disappointing<sup>1</sup> because the Viet-Minh was a remarkable "stirrer" of ground and the "mine-clearing" dog often caused false alarms, the result being that the speed of opening up the route was slowed down. In addition, the very irregular laying of mines or explosive charges led the animals astray because their attention in this type of mission was frequently relaxed.

On the other hand, in guarding sensitive areas and depots the dogs gave excellent results and significantly facilitated the task of the protection of detachments. The animal, however, should not be required to do miraculous feats such as, for example, to detect an enemy from among similar persons of the same race.

When the dog is entrusted with guarding an isolated installation (permanently or for a certain number of hours) the dog can detect an intruder almost without fail. The security of a depot is therefore advantageously assured by the construction of a patrol path (between two rows of trellis work) inside of which the animals can move about freely and this system appears to be very advantageous in the case of patrols carried out by a man-dog team, the dog being held on a leash.

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<sup>1</sup> Tests attempted in the vicinity of Haiduong (Tonkin) in May-June, 1954.

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In all of the missions, the presence of the dogs in a post, depot or at the head of a road opening produces a certain psychological effect on the enemy who in many cases will fear being detected and will prefer to only have to cope with humans.

Thus, the canine units, despite their disadvantages and despite the handicap of the climate, have rendered services which have been very much appreciated. But it should be remembered from the experience of Indochina that the dog should only be used in missions in which use is made of the dog's natural qualities of watcher and hunter, e.e.:

- the look-out and the alert,
- the searching of hide-outs and the detection of underground cover.

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## CHAPTER VIII

### LOGISTICS

The conditions under which the various Services were placed in Indochina were too peculiar<sup>1</sup>, the same holding true for the forms of combat, for it to be possible to extract general lessons from them which would have good chances of being usable in another theater without making too bold an extrapolation or without leaving too much to the imagination.

The only remarks based on experience and which do not appear to be too accidental have to do with particular points such as the behavior of material during combat, the organization of supply by air, the equipment and the food of the fighter.

On the other hand, it is probable that certain observations presented in Volume II may retain all or part of their value in a western theater of operations provided they are adapted to a certain extent. They obviously will not be definitely shorter and more confined in their purpose than the corresponding chapters of Volume II.

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<sup>1</sup>"An overseas expedition normally means the utilization of very weak numerical strength over considerable areas. It is materially impossible, consequently, to give the troops heavy logistical support". Colonel H, (Some infrastructural defects in the Indochinese Theater).

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## THE MEDICAL CORPS

The methods adopted in Indochina for the Medical Corps, both in the field of the organization and medical units in forward positions and in the evacuation procedures, are worthy of retention because they could be utilized in a European theater of operations.

**ADVANCE UNITS** - The most original creation was that of the Antenne Chirurgicale Avancée (Forward Surgical Arm) which became the Antenne Chirurgicale Mobile (the Mobile Surgical Arm) after a few changes in particulars and an effort to reduce the equipment load.

The personnel of a Mobile Surgical Arm was made up of:

- a surgeon
- an assistant
- an anesthetist
- an operating room attendant (instrumentalist)
- a sterilizer
- a resuscitator
- a hospital attendant.

The Arm (antenne) was therefore "a small unit (smaller than a company platoon of a medical battalion of an infantry division), simple, technically competent (much more than a first-aid post)".<sup>1</sup>

In 1953-1954 there were 21 of them, 6 of which were attached to the Vietnam army while using French personnel for the surgeon, his assistant, the anesthetist and the resuscitator.

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<sup>1</sup>Report by the Headquarters of the Medical Corps in the Far East.

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"The mission of an arm was above all to restore the wounded to the point where they could be evacuated and to ensure this evacuation in the fastest amount of time: reexamination, selection, resuscitation, transfusion were the biggest tasks. Exceptionally, in case of extreme urgency or when evacuation became impossible or required delays which were incompatible with the seriousness of the wounds, the arms carried out complete surgical operations".

"In normal functioning, with sorting, bringing out of shock, treating the wounded, only urgent operations had to be carried out: amputation of a crushed limb, for example. What was important was to evacuate the wounded man and have him reach an equipped unit in fairly good shape without taking too much time".<sup>1</sup>

This unit offered another characteristic feature:

"The A.C.M. (Mobile Surgical Arm) was not attached to any large unit: it was a general reserve unit which "stuck" to the operations. Indeed, the precariousness of medical means did not make it possible to maintain useless and heavy units such as the collecting companies and it also meant that superior units and units which were indispensable elsewhere should not be left without work".

"It never would have been possible, on the other hand, to set up all of the units which would have been necessary if systematic endowment by large units had been adopted".

The Mobile Surgical Arms were allocated in an undetermined number to an operation and not to a unit: the number of mobile surgical groups needed at a given time and place was determined by operational needs, central supports, numerical strength and estimated losses.

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<sup>1</sup>Report on the surgical arms of the type used in the Far East Ground Forces, edited by the Headquarters of the Medical Corps in 1953.

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The setting up during an operation was also determined by a technical requirement: the ease and timing of an evacuation from the line of fire and the possibilities of secondary evacuation. With this procedure, the forward Medical Corps was always there where needed, as needed and when needed.<sup>1</sup>

This procedure became even more exacting when the A.C.P.'s (Airborne Surgical Arms) were created.<sup>2</sup>

These groups were made up exclusively of personnel having a parachutist certificate, that is to say:

- a surgeon,
- an operating assistant,
- a resuscitator,
- an instrumentalist and wound tender,
- a sterilizer,
- two attendants (general service and secretary).

Lastly, in addition to these two types of units, we must point out the appearance in 1954 of the small sorting and resuscitating forward team.

In 1953, in effect, at the time of operation "Mouette", the need arose of placing a resuscitation team as near to the line of fire as possible.

An Airborne Surgical Unit had worked under these conditions with evacuation from an A.C.M. with an airstrip.

This experience was conclusive and a new unit was created which made it possible to save many lives.

In the surgical field itself, particularly valuable methods resulted from the campaign.

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<sup>1</sup> Report by the Headquarters of the Medical Corps in the Far East.

<sup>2</sup> Eight Arms of this type were operating in 1953-1954.

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"Standardization of methods of treatment was general and technical notes indicated the methods to be used at all echelons from the "arm"-level to the base hospital.

"The role of the consulting physicians was very essential. They followed the evacuated person from the forward to the rear position and verified repatriations. Errors and deficiencies were thus discovered right away. Continuous improvements were achieved".

"Treatments before, during and after the operations, with resuscitation, were developed to a great extent".

"Treatment for shock conditions was improved. This was done first of all by very effective resuscitation and the utilization, in particular, of whole blood.

"It was not only a question of quantity of blood but also of the quality of the blood given. This blood transfusion has to be given as soon as possible, that is to say at the combat site, in order to prevent cell damage in important tissue. This damage cannot be corrected once it has set in".

"Then, disconnection by means of Phenergan-Dolosal or Diparcol-Dolosal, widely used subcutaneously right from the combat position, was very useful in treating neurovegetative shock phenomena. It is not a question here of "hibernation (seclusion) because this is a method which cannot be systematic, being delicate and very limited and requiring numerous and very well qualified personnel, constant watch, in a hospital atmosphere with air-conditioned rooms".

"Tissue therapy and certain palliative operations (for example individualization of the radius and the cubitus for wounded men whose hands had been amputated) are to be pointed out among the services of repair surgery and outfitting of amputees".

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The decrease in the figures of operating deaths illustrates the results which were obtained thanks to the sum total of all of these efforts:

1949	5.61%
1949	4.81%
1950	4.27%
1951	4.50%
1952	3.26%
1953	2.90%

**EVACUATIONS** - The eternal problem concerning the most rapid means possible for transporting wounded had not been completely solved at the end of the campaign, but very satisfying solutions had been applied to it.

"The most diversified methods were used from the first aid station or collecting station, where the wounded man received careful treatment and when necessary a subsutaneous injection which was superior to morphine; conventional medical treatment when possible, evacuation by water, by crab through the rice-fields, by air".<sup>1</sup>

"Evacuations by air, by helicopters from advance areas, were the most rapid and the least liable to worsen shock.

In the case of evacuation from the surgical unit to the evacuation hospital, evacuation by air once more becomes advisable because of its advantages. This evacuation is done by helicopters, Moranes and small planes".

"Evacuation from the initial hospitals to the base hospitals and to specialized centers often had to be done by air, by Dakotas, owing primarily to the large distances involved. The wounded men were taken care of on board the planes by the Aviation Medical Corps of the Army. The flight plan was very carefully studied in the case of some evacuees (in particular those with chest ailments).

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<sup>1</sup> Report by the Headquarters of the Medical Corps in the Far East.

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"What should be retained is the usefulness, the necessity of widespread utilization of air transportation and its harmlessness. There is really no contraindication.

In forward positions, the helicopters, which can go anywhere, is indispensable: it should be rather large because small models are ineffective in mountain regions. Also, only large helicopters make it possible to care for the patient and to continue resuscitation on board the helicopter.

Small planes are quicker for evacuation from the unit to the hospital. Just as in the case of the helicopter, these small planes can have a very low ceiling if necessary.<sup>1</sup>

But should these air means belong to the Medical Corps? Doctors have vigorously defended this thesis:

"It must once more be stated how necessary it is for the Medical Corps to have its own air transport".

There is a medical train. There should also be medical planes. Although in 1914 the old carriage for wounded men, horse-driven, without springs was customary, in 1940 it would have been considered ridiculous and dangerous. At the present time, too, the medical train has become out-of-date.<sup>1</sup>

This does not mean that the medical train should be discontinued. But when we consider the absence of bumps and the speed which are provided by the helicopter and the small plane, their necessity cannot be disputed. They ensure the saving of many lives. The wounded man must be carried, as soon as he has been prepared for evacuation, by a team which is technically equipped with qualified personnel with all of the materials and devices necessary for all of

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<sup>1</sup>Report by the Headquarters of the Medical Corps in the Far East.

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the care necessary before, during and after the operation.

"This means, as we have already pointed out, that the surgical unit has a helicopter and signal communications equipment".<sup>1</sup>

At the hospital: same means, plus light planes.

"It is illusory to say that these air facilities are given to the Medical Corps any time it requests them. This is only in theory".

"In practice, the Morane or the helicopter often have another mission to accomplish. The wounded are the ones who have to wait. If the wounded have to wait too long, then the unit surgeon operates. But the prognosis of an abdomen operated upon at the unit-level and the prognosis of the same abdomen operated upon in the hospital, after resuscitation continued during the evacuation, is far from being the same. The abdomen which has been operated upon can no longer be transported. Nevertheless, it is necessary at all cost to move the wounded away from the line of fire. These wounded men, from the practical point of view, have become a burden".<sup>1</sup>

"Advance-position medical aviation is indispensable but this is not a separate branch. It is part of the Medical Corps".<sup>1</sup>

The creation of a Land Army air force to include, in addition to the A.L. O.A. units and the helicopter squadrons, a certain number of mixed units (motor vehicles and planes) in order to meet the requirements of the medical corps appears therefore to be the solution which will become more and more necessary.

This is perhaps one of the basic lessons of the campaign of Indochina.

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<sup>1</sup>Report by the Headquarters of the Medical Corps in the Far East.

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## THE QUARTERMASTER CORPS

The very peculiar conditions under which the Quartermaster Corps operated in Indochina almost eliminate the lessons which can be extracted from this experience and applied to a European theater of operations.

"The organization of the Quartermaster Corps dealt with a number of territorial establishments and not with field units as defined by the regulations in metropolitan France. This system became necessary as a result of both the characteristics of the country and the characteristics of the operations".<sup>1</sup>

Thus, the only observations given here will have to do with particular points:

Rations - The feeding of the troops was satisfactory as a whole and only resulted in a few particular remarks.

At the battle of Dien-Bien-Phu it was observed "that a level of 14 days of rations for a defensive battle with logistical support from the air constitutes a minimum below which it would be dangerous to drop".<sup>2</sup>

"The rations for this same battle and which have to do only with food were as follows:

"3 kilograms per diem of provisions per European,

2.5 " " " " " North African or African

2 " " " " " indigenous personnel or auxiliary

1.5 " " " " " prisoner"<sup>2</sup>

The "Cold Chain" - "At the beginning of hostilities the troops were fed with fresh meat from local livestock. This source of meat soon was exhausted".

<sup>1</sup> Report by the Quartermaster General, Director of the Quartermaster Corps of the Far East Land Forces.

<sup>2</sup> Report of the Military Quartermaster, officer 3rd class X.

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This situation led the Quartermaster Corps in Indochina to create a "cold chain" and to import boneless frozen meat in boxes. This solution is perfect but it requires, if it is to be used widely, a complete distribution chain from the port of debarkation to the consumer and the link which leads to the consumer should be mobile.

The so-called "collapsible" Pictet and Neve refrigerating equipment are, in effect, "prefabricated" equipment and should not be moved. They are very practical for setting up fixed depots but cannot be recommended for temporary posts and even less so for units. The users should have refrigeration equipment of small capacity (from 5 cubic meters to 10 cubic meters) on a trailer which can be drawn by a G.M.C. and having two refrigeration systems, one activated by a gasoline-run motor, and the other operated by an electric motor.

Lastly, in order to assure continuity of the various links it is highly necessary to have refrigerated trucks available for some routes and light containers which can be transported by air.

K-Rations - This subject has been fully considered in two studies made by the Quartermaster Corps.

"It seems useless here to repeat the tenor of these documents. In short, combat rations seem almost to have been perfect, except for emergency rations. Emergency rations are not used very often. They are therefore kept in warehouses for a long period of time and are generally inedible at the time they are used. Besides, considering their very peculiar nature, renewal of supplies cannot be assured by obligatory consumption".

"It would be advisable that no efforts be made to give them in the form of "foods" in the common meaning of the term. The consumer, who uses them in desperate situations only, would most certainly be of the opinion that he is not

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dealing with "foods" here but rather with "medicaments". Offering this material in the form of tablets, ampoules, etc., containing the elements which are necessary for maintaining life would probably allow a longer preservation of these foods. It would be a good idea to include essential pharmaceutical products in these rations, such as sulphanides, disinfectants, stimulants, dressings for wounds, tablets".<sup>1</sup>

This is the methodology which was used for the FOM 102 and FOM 103 rations which were better appreciated than the 40 and 41 rations.

Cooking Methods - Cooking equipment has not provided complete satisfaction.

The U.S. model 37 field kitchen, gasoline-operated, has to be carefully used. The spray nozzles block up quickly if they are not kept in good condition.

Field kitchens require the utilization of wood and dry wood is sometimes difficult to find.

"It seems that research could be oriented towards perfecting a heating burner using gas-oil which could be adapted to field kitchens. These burners, in addition, should be usable separately underneath various types of receptacles. Tests were made in Indochina shortly prior to the end of hostilities and the first tests proved satisfactory".

"There are no special methods of cooking for small groups. The scouts who were sent out into the brush had to "make out as well as they could". Certainly, a wood fire underneath the individual mess tin or field plate is the simplest method but it is still necessary to have dry wood and not be afraid of making smoke. It would be necessary to adopt a heating model of the "camping"

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<sup>1</sup> Report by the Headquarters of the Quartermaster Corps of the Far East Land Forces.

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type, using solid fuel and with which a man could at least prepare tea or coffee and boil water to cleanse a wound.

"This need was particularly felt during the operation of Dien-Bien-Phu and the Fuel Service, upon the request of the Quartermaster Corps, proceeded to manufacture solidified alcohol based on soap".<sup>1</sup>

CLOTHING - The remarks which have already been made in Volume II concerning the quality of the fabrics are in part valid for a European theater of operations. The heaviest fabrics are not necessarily the warmest ones. Mountaineers have been aware of this fact for a long time.

Besides: "it would have been advisable to treat the materials which were to be used for making clothing so as to make them unshrinkable. The extent of shrinkage due to washing was sometimes so great that the clothes could no longer be worn by the original users".<sup>1</sup> In this field, as well as in many other fields, savings in quality resulted in waste and lack of satisfaction on the part of the user.

Lastly, "the existence of different widths for the fabrics of the same nature somewhat complicated tailoring". We have here the same need for standardization that was already mentioned in the case of material.

Beds - "The field beds had many disadvantages: they were heavy, bulky, poorly manufactured, and had a wooden frame which broke down easily".<sup>1</sup>

Lighter beds with a metal frame and protected by casing during transport are in existence in the trade. It would be advisable to try them out.

Camping Equipment - Tents of all types were put to rude tests in Indochina.

The individual tent cloth of French manufacture was not entirely satisfac-

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<sup>1</sup>Report by the Quartermaster General, Director of the Quartermaster Corps of the Far East Land Forces.

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tory: the fabric quality was not good enough and the sizes were too small. It is impossible for a unit to bivouac in bad weather by sheltering its men with the customary tent fabrics.

Many units, especially those which had trucks (artillery, engineers) ended up using fabrics from extra tents to cover the steering wheel. This proves that the problem should be studied again. There now exists in the trade fabrics which are light, very resistant and which would make it possible to provide the combat soldier with a tent fabric which could really shelter him, without being too heavy to carry.

These remarks only stress some of the ideas expressed in the Quartermaster Corps reports and in some personal reports. No important lesson can be taken therefrom but on the whole we have an adequate report concerning experimentation with material, equipment and foods under the most diversified combat conditions.

The thousand observations on particular matters which are included here cannot be summarized but in this field perfection can only be achieved by making an all-out effort.

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## THE EQUIPMENT SERVICE

As in the case of most of the other Services, the lessons learned from the Indochinese campaign as regards the Equipment Service are marked by the characteristics of the Theater of Operations and only detailed observations dealing primarily with the behavior of the equipment in combat can be applied to other theaters of operation.

The observations relative to equipment have already been made in the chapters devoted to certain Branches (Artillery, A.B.C., Signal Corps). Thus, only a few particular points will be given here:

Infantry Equipment<sup>1</sup>- The Infantry arms, as a whole, behaved well. Nevertheless, some weapons resulted in firing problems, for example:

The Mle 1936 rifle presented numerous enlargements of the barrel near the mouth. Their frequent occurrence may be owing to insufficient maintenance, "but it appears doubtlessly that the primary cause is the lack of resistance on the part of the barrel".<sup>2</sup>

The 50 machine gun gave rise to problems when the alignment of the head-piece was defective. "It is inadmissible that the utilization of a weapon should require prior alignment of the head piece in order to avoid difficulties; the design of this weapon should be reexamined in the light of this".<sup>2</sup>

As regards the outfitting, "the effect of climate on the leather has resulted in discontinuance of this raw material".<sup>3</sup> The type T.A.P. fitting made of webbing also caused problems: rapid deterioration of the webbing, impairment

<sup>1</sup>See Chapter I, "The Infantry".

<sup>2</sup>Report of the Headquarters of the Material Command of the Far East Land Forces.

<sup>3</sup>Report of the Headquarters of the Material Command. .

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of the buckle which is insufficiently protected against humidity. "The protection of the metal parts should be strengthened and a more resistant material should be used which is less sensitive to humidity than the fabric presently used (nylon for example).<sup>1</sup>

Ammunition - The diversity in the weapons used<sup>2</sup> obviously resulted in a great variety of categories of ammunition and the scattered state of the units did not simplify supply.

"In order to facilitate supply operations and the utilization of ammunition, it is desirable to be able to parachute all of the ammunition and to pack it up completely and arrange the packages so as to make the parachuting possible without any prior preparation".<sup>3</sup>

These desires are not new, no newer than the necessity, which has been expressed many times but which should be repeated again, of having thick packing.

The markings on the ammunition have also been criticized. The outside markings on the packages which might be erased should be replaced: "either by the U.S. "Data Card" system or by the German system which consists of a label glued inside the box and giving complete and accurate information concerning the ammunition and the constituent elements".<sup>3</sup>

The behavior under fire of certain ammunition has been seriously criticized. In particular, some rockets were the cause of numerous accidents<sup>4</sup> and

<sup>1</sup> Report of the Headquarters of the Material Command.

<sup>2</sup> See Volume II.

<sup>3</sup> Report by the Headquarters of the Equipment Service.

<sup>4</sup> The U.S. M 53 rocket with a 0"05 delay (60 and 81 mortar projectiles) had a high percentage of misfires. The U.S. M 51 A 5 rocket (projectiles of 105 H.M. 2) had numerous premature bursts: an average of one out of 28,000 shots fired, in 1954. The R.Y.G. 18 C.R. functions very badly on marshy ground (ricefield).

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our 32 x 0 antipersonnel grenades were quickly prohibited from use.<sup>1</sup>

Ammunition of the "canister" type was praised by artillerymen and by armored units for close-in defense. Every cannon should have this kind of ammunition regardless of its caliber and its usual mission. This requirement, which is felt at all times, seems paradoxically enough to be forgotten at the time that formulas for surface warfare are generalized which increase the vulnerability of the rears.

Light Artillery Observation Planes - The Piper Cubs L. 4 used at the beginning of the campaign were not powerful enough for a mountain country and a tropical climate.

The Morane 500 planes which replaced the Piper Cubs were heavy and slow and also lacked power and required a great deal of maintenance. The canvas cover did not resist very long under the climate. Their radio sets suffered. A pilot was able to write with a humorous touch concerning the Morane: "although it almost ended this campaign, it did it by showing exemplary good will, perhaps to defy its disparagers".<sup>2</sup>

Only in 1954 were the CESSNA L 19's taken into consideration. They are observation planes which are very well adapted to this mission. Their reserve power is very useful and they require much less maintenance than the Moranes, as shown by the following table which illustrates the manpower needed for maintenance:

	Morane 500	L. 19
daily maintenance (for 1 hour of flight)	8 hours	1 hour
60-hour inspection	80 hours	13 hours
120-hour inspection	130 hours	22 hours

<sup>1</sup>As a result of various accidents, 105,000 were destroyed for safety measures, others were temporarily prohibited, further shipments from France were halted.

<sup>2</sup>Lt. X, pilot observer of the G.A.O.A.

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Equipment Desired<sup>1</sup> - Among the equipment which certain users would like to possess, we can point out the following suggestions from several reports:

- Silent electrical equipment. In a P.C. of a G.M., for example, there is always at least one electrical equipment operation. Not only do the personnel of the P.C. complain about not being about to work in the vicinity of this equipment (the radios in particular) but the location of the P.C. is revealed by the noise, especially at night and at great distances.

- On a more general level, silent operation is not sought after sufficiently in military equipment, especially in reconnaissance and communication equipment (motorcycles, for example).

- Comfortable P.C. cars or trailers which can be utilized upon stopping. Several changes have been studied, in particular the design of a 1 ton trailer with tarpaulins fitted to the sides, the design of a half-track, etc. Efforts have been scattered. An overall study is desirable. The working equipment (panels, folding tables) should be easily disassembled so that it might be set up in a shelter.

- "Mobile observers" made up of a trailer or, even better, a jeep-type vehicle carrying a "folding metal tower" system. Industry is manufacturing at least two types like this: the first is made up of telescopic tubes operated by compressed air, the second has a fastening system which transforms a flat panel rolled up onto a drum into a triangular pylon. These observation towers would be very useful not only on plains but also in wooded regions. In Indochina, "the impossibility of finding observatories in the Tonkin delta resulted in a

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<sup>1</sup>The equipment and armaments which are proper to certain branches (Artillery, A.B.C., etc.) have been mentioned in the chapters dealing with these branches.

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study concerning the installation of metallic towers in the principal posts".<sup>1</sup>

It is a certainty that a mobile type of equipment would be of great service providing that it was light and usable on all types of ground.

Documentation - Many times during the campaign the need was expressed for having accurate, complete documentation provided at the necessary time, that is to say at the same time as the equipment, even before if possible.

Whether it had to do with U.S.-origin documents (in English or in French) or information concerning adaptations of armament carried out on the spot, the same shortage was felt. In the event that a translation of an English document is not available (or is being translated) it would be advisable to disseminate on a large scale the original documents in the English language because of the fact that the units often had part-time interpreters which sufficed for translating some interesting technical passages.

Lastly, there is no need to point out again that the publication of information should be continued.

If a conclusion to these few remarks is necessary<sup>2</sup>, it could be pointed out that many of the imperfections noted were the result of one and the same cause, alas: our lack of means of all types, this lack being compensated for in a few areas only by foreign assistance without the over-all situation ever being able to attain the homogeneity which is characteristic of an efficient logistics system.

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<sup>1</sup>Annual report, 1954, of the Artillery of North Vietnam.

<sup>2</sup>The report of the Headquarters of the Equipment Service, as well as the reports of the branch commanders and directors of Services, give much more complete information on the behavior of equipment and armaments.

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## SUPPLY BY AIR

From the balancing pole\* to the airplane, all types of transport means were used in Indochina for supplying our mobile or fixed units.

Even though there is a lot to be learned from the "logistics of the balancing pole" which was utilized by the Viet-Minh, the considerable extension of supply by air opens up interesting perspectives for the future.

We should, however, not forget the fact that the air transport operations were not molested by an enemy airpower. The importance assumed by air supply was the result of the very conditions of the war in Indochina, including the fact that enemy airpower was inferior to ours.

Right from the beginning of hostilities, certain ground routes proved either to be non-existent or unusable because of the enemy and the only recourse was to use the air. About sixty posts at Tonkin were only able to subsist thanks to parachute drops of supplies and this procedure very quickly proved to be the only way to maintain the resistance of a large number of garrisons.

But, soon the Command worked out operations for which it was admitted a priori that supplies would only be sent by air. This method of supplying a battle opened up a new form of manoeuvre in which the network of ground communications was not even considered any more: Only the possibilities of the binomial "Plane-Parachute" were taken into consideration.

Large-scale operations distant from the controlled zones could now be envisaged and centers of resistance could be established there: the entire territory of Indochina, even in its most far-off regions, fell into the scope of action of our mobile forces.

\*Translator's note: refers to the pole carried across the shoulders by coolies. Burdens are balanced at both ends.

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This dual method explained the course which was disputed from 1948 to 1954 between the tonnages to be parachuted and the possibilities of air transport.

During the battle of Dien-Bien-Phu efforts attained their maximum intensity. From January 20 to May 7, 1954, indeed, our planes dropped:

- for Dien-Bien-Phu, 11,000 tons, 7,000 of which was dropped during the 56 days of fighting,
- for other battlefields, 19,000 tons.

This is a total of 30,000 tons and corresponds to cargo carried by 12,000 G.M.C. trucks.<sup>1</sup>

Such needs give a hint to the problems which came about concerning the three instruments of air supply:

- air vehicles,
- parachutes,
- delivery units.

Air Vehicles - "The transport planes used by the Airborne Troops in Indochina from 1945 to 1955 were adapted more and more to large-scale utilization of parachutists and air deliveries".

"The first plane to be utilized was the Junker 52, a three-engine German transport plane. It was gradually replaced by the C. 47 which, in its turn, was replaced at the end of 1953 by the C. 119. This plane was the most recent one to come from U. S. technology and it was capable of dropping a cargo of 6 to 7 tons in just one drop thanks to its power and its axial door".

"Lastly, after the cease-fire the French cargo plane Nord 2501 made its

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<sup>1</sup>According to a report by the airborne troops "the tonnage dropped on Dien-Bien-Phu from Nov. 20, 1953 to May 7, 1954 was about 100 kilograms per minute (this average does not include carrying and parachuting personnel) and required the use of more than 80,000 chutes.

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appearance in Indochina".

"Whereas the first two types of planes (Junkers 52 and the C. 47) only permitted dropping personnel and light equipment (the second, however, having the benefit of additional comfort and tonnage), the C. 119 and the Nord 2501 also made it possible to drop heavy equipment: 1 ton packages and vehicles. The C. 119 had additional tonnage capacity.<sup>1</sup>

On the other hand, the Junkers 52 and the C. 47 also presented certain other problems and "the war ended in Indochina without satisfactory and new solutions having been found to some basic problems concerning the procedures for carrying out parachute drops and for ground lights".

"Parachutings of light equipment from the C. 47 could hardly ever be carried out in just one trip over the drop zone despite all of the attempts made at rotation. The 10 trips which were imposed as a result of present vagaries involved greater and greater risks owing to enemy anti-aircraft defense".

"Parachuting of heavy equipment from the French Nord 2501 planes has not been perfected as regards the U.S. A.22 1-ton sheaths under U.S. parachute G. 12. These items, which were used on a large scale in Indochina in C. 119 planes are not very well-known by technical groups in continental France".

"These technical groups concentrated on problems dealing with heavy dropings with package-ejector parachutes. This method is not very effective for conventional cargoes of 1 ton of supplies".

"The procedures used in dropping by means of gravity, which are satisfactory for the C. 119's, do not appear to be utilizable at the present time, with acceptable accuracy, from Nord 2501's because the angle at the level of the

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<sup>1</sup>Report from the Airborne Troop Command on the lessons to be learned from the campaign.

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luggage-bay is insufficient during flight".<sup>1</sup>

Besides, it often was necessary to bring to the ground certain heavy equipment whose presence was indispensable.

Since parachute drops could not be used, it became necessary to create makeshift landing strips and to use aircraft capable of landing on a relatively short strip. The Bristol Freighter, a cargo plane of British make which was used by the civilian navigation companies in Indochina, solved the problem many times by transporting, in particular, M 24 tanks which had been dismantled previously.

"Since 1949 the Command wished to have assault landing cargo planes capable of putting down and taking away a large load (to 2 tons) of personnel or equipment on short strips (less than 150 meters) which could be hastily set up".<sup>1</sup>

"Despite the pressing demands made on the War Department and the plans and models of a renowned aeronautical builder<sup>2</sup>, the Air Department did not follow up on these requests.<sup>3</sup>

"However, the utilization of a plane of this type is justified on the tactical level immediately after the parachute phase of an operation and before the regular air transport phase<sup>4</sup> in order to continue the battle with ordinary units of all branches and in order to assure economical air deliveries.

"Such planes would have made it possible in certain cases to economize not

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<sup>1</sup> Report of the Airborne Troop Command on the lessons to be learned from the campaign.

<sup>2</sup> Louis Breguet, (inflated wing).

<sup>3</sup> Such a plane didn't interest either the Air Army or the Civilian Aeronautics organizations.

<sup>4</sup> or to replace it, if it became impossible.

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only on specialized airborne troops but also on expensive and hard-to-find material parachuting equipment. No aircraft existing at the present time (helicopter or plane) can effectively fill in this technical gap between parachutings and conventional air transport".

Parachutes - "Parachutes made of light material and of all types and national origin were satisfactory on the whole, but their diversity complicated the task of the Air Delivery Companies".

"For a long time the package jig in Indochina weighed 100 kilograms. Tied up with rope, it was dropped with a parachute having a lifting power of 100 kilograms, but there was a great variety of parachutes of all origins".

"Although the G. 1 - 100 kilogram parachute gave excellent results, the type G. 12 parachute used with the C. 119's proved without a doubt to be the most efficient".

"This parachute with a one ton capacity makes it possible to concentrate delivered equipment over a drop zone. The recovery of the equipment is made easier. Besides, it takes less time and personnel to fold a G. 12 than it would take to fold ten G. 1's which would be necessary for the same load. Also, with regard to storing, the G. 12 takes up less space".

"Nevertheless, this parachute is expensive (because it is manufactured of nylon), fragile and does not always open. It does not seem to be of the quality of the products of the French industry nor as cheap as our productions for the air service."

"The current trend of technical groups in France towards clusters using canvas made of light material and canvas reshaped out of personnel parachutes will make it possible to find a good solution to this problem".

"Be that as it may, experience has shown that it was necessary to have re-

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sistant parachuting materials in order to be able to support the stress imposed and that these rare and valuable materials had to be restored (we know that only for the fortified camp of Dien-Bien-Phu more than 200 sets of G. 12 sheath A. 22 were consumed at a cost of 200 million francs each day and that if the battle had lasted longer the supplies from the U.S.A. would have been very quickly exhausted").<sup>1</sup>

"In the event that several types of materials are envisaged, the choice of the parachutes should be able to be limited to canvases of:

50 kg. (G. 9), 300 kg. (C.P. 3), 1500 kg. (G. 110, 100 kg. 9G. 1 and G. 1 A), 1000 kg. (G. 12).

"It should, however, be admitted that the parachuting of small packages, except in exceptional cases, should not be continued. The formula lies in dropping from a platform carrying a load of 1 ton or 3 tons. Present-day planes, the C. 119 and the Nord 2501, make this possible".

"Delayed-opening drops made from a high altitude with devices rapidly put together and manufactured were not effective because of:

- inaccuracy in the altitude and the length of free fall,
- irregularity in the deployment of the parachutes.

"In 1950 the post of Muong-Kia and then the post of Pho-Lu were encircled. Rebel anti-aircraft defenses prevented the Junker 52 from making drops at low altitude. We resorted to parachuting with Alcan containers and a mechanical system with a six-second delay from the opening of the car. The delay proved

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<sup>1</sup>The parachutes and heavy parachuting rigging used for air delivery were produced in such a way that they could be used several times. It is essential to take economy precautions when they are recovered after the droppings. These recovery and evacuation operations should be assured by personnel from the C.I.A.'s who are parachuted at the same time as the equipment, and in accordance with the wishes of the tactical commanders of the drop zones.

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to be insufficient and the results proved disappointing".

"At Dien-Bien-Phu in 1954 the problem cropped up once more but this time on a large scale. The anti-aircraft defense, which was becoming more and more effective, forced the C. 47's to make their drops at an altitude of 9000 feet from the ground. The drop zone became narrower every day".

"A pyrotechnical delay system permitted opening delays of 40 seconds".

"This system was simple:

- a cardboard plate was folded into two, one of the sides was pierced with two or three holes leaving a passage for the throttling belt.
- two detonators were inside,
- two slow-burning wicks and an igniting system (a lighter)".

"Many factors made this set-up defective: hasty fabrication, with inconsistent materials, approximate duration of combustion of the wick, malfunctioning of the detonator, a loss of 20 to 30% resulted therefrom. Nevertheless, this was the only way"!

"Delayed-opening parachuting, therefore, does not seem to have been perfected sufficiently to be able to be used on a large scale on enemy contact".

"In the event that it becomes necessary one day to supply numerous troops in narrow bridgeheads surrounded by active enemy anti-aircraft defense, it will be necessary for technicians to make a more effective system available to users".

"Otherwise, the only solution lies in carrying out the dropping in just one trip with strong fighter plane support".

"Lastly, ground-lighting of drop zones has remained in the makeshift stage, which, by the way, is generally satisfactory, but which stands to gain by being modernized at the same rate as progress in electronics".<sup>1</sup>

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<sup>1</sup>Report from the Airborne Troop Command.

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Air Delivery Companies - At the beginning of the conflict, an air supply platoon was sufficient for all missions over the entire territory. In 1948 a C.R. A. company<sup>1</sup> was set up and in November, 1953 there were two units of this kind.

Increasing needs were then met through temporary reinforcements taken from the parachute battalions. This was not a good idea because the implementation of supply by air is not to be improvised.

But, towards the end of the conflict the situation tended to become normal and there were 4 air supply companies, i.e., a numerical strength of 1200 men. These companies were strengthened by a large number of local workers (400 to 500 prisoners for the Air Supply Company), and transport means ranging from automobile to train.<sup>2</sup>

During the greater part of the campaign, airborne troops took charge of supplying equipment by air, but at the end of hostilities trains took over this mission completely.

The organization of the companies, which had evolved, tended to come closer to the formula used in metropolitan France.

Experience showed, however, that the cadre either had to have belonged to airborne units or at least they should have received training in the airborne troops school in order to learn the development of parachuting techniques or the employment of this service division.

"Besides, the specialty of stevedore-parachuter requires robust personnel, perfectly trained, instructed in the utilization of conditioning rigging, accustomed to flying, at least at the door of the plane".

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<sup>1</sup>Air Delivery Company.

<sup>2</sup>More than 200 trucks during the spearhead period in 1954.

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"Parachutism should continue to be the basic training for this specialty".<sup>1</sup>

"The equipment of an Air Delivery Company should be of a kind to tend to reduce maintenance time".

"In Indochina maintenance was done primarily by common workers (prisoners). Large-scale utilization of this prisoner manpower made it possible to solve many problems".<sup>1</sup>

But more modern solutions should be found: gangplanks to bring together the level of the trucks and the plane gangways, lifting equipment having a force of 5 tons, etc.

Lastly, "the use of chains, for heavy equipment, equipped with rolling tracks would be very useful and effective when heavy loads must be dropped owing to battle conditions".<sup>1</sup>

On a more general level, the experience of the campaign makes it possible to evaluate how many delivery companies would be needed in a theater of operations and how they should be implanted.

"The problem is complicated because it is related to various factors:

- "Air infrastructure,
- evolution of the tactical situation,
- command organization,
- possibilities of dispatching provisions, by land or by sea, which are to be set up".

The most solid basis of calculations resides in the tonnage to be shipped by air.

We have noted that one Air Delivery Company of 300 men could handle 150 to

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<sup>1</sup>Report by the Airborne Troop Command on lessons to be learned from the campaign.

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200 tons daily. An increase in the numerical strength, however, would not result in a greater yield.

"A certain number of Air Delivery Companies should therefore be provided which could work from various terrains or on the same terrains".

"These units would be set up near aviation take-off strips. Air danger would not allow them to concentrate technical installations but would force them to deploy and to set up camouflage. Technical installations made of concrete, similar to those of Gia-Lam and Tourane, will no longer be permitted. Large tents would be the only shelter".

"For, the mobility of the Air Delivery Companies will make supply by air possible".

In short, "The principles acquired or corroborated during this campaign of Indochina are, without a doubt, still valid for another theater of operations, but they must of course be adapted to the circumstances and to the enemy. In the "war of large open spaces" air supply, not needing ground routes, will be without a doubt the prevailing factor in logistics".

There are no sacrifices which are too great, therefore, to be granted to air supply units and to the corresponding aviation transport".

"In conjunction with this effort, our large units should orient their thinking towards equipment which can be carried by air and which can even be parachuted. The various branches should also strive to seek out "conditioning" for the various supplies which is better adapted to this new type of delivery".

"It is the bringing together of all of these efforts which will give air supply its full effectiveness, thus assisting our large units to acquire a

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\*Translator's note: probably means that equipment should be packed, stored, made ready, etc., with a view to its being parachuted.

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strategic mobility which is on a par with new requirements".<sup>1</sup>

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<sup>1</sup>Report by the Airborne Troop Command.

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